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IN the last 25 years the progress of our knowledge of nutrition has been comparable to that of bacteriology at the end of the last century. Following early clinical observations suggesting a relationship between diet and disease the experimental method came into extensive use for investigating the influence of diet upon the growth and well-being of animals. Vitamins were identified and rapid progress has culminated in the recent synthesis of ascorbic acid, the first complete victory of chemists in the field of nutrition.

Studies have concerned not only the vitamins but also the metabolism of iron, calcium, phosphorus, and iodine. And now an entirely new method of approach to problems of nutrition has been opened up by the Harvard workers in their studies of pernicious anæmia. Their discovery of a conditioned dietary deficiency disease may well prove to be a more important conception in nutrition than anything which has gone before.

Rickets and Osteomalacia

Pathologists, chemists, and clinical workers are agreed as to the essential identity of rickets and osteomalacia. What difference exists is merely that of age-incidence: osteomalacia is adult rickets. In the industrial towns of England to-day rickets is still a common disease. Osteomalacia is endemic over wide areas in Northern India, Japan, and Northern China, and occurs sporadically in certain parts of Europe. So far as England is concerned, osteomalacia does indeed exist in the distressed areas of the Midlands and the North, but fortunately it is still rare.

Morbid anatomists agree that in rickets and osteomalacia the essential abnormality is a deficient calcification of osteoid tissue. This deficiency is generalised throughout the skeleton. Pommer (1885) considered that in both diseases the broad osteoid seams were due to deficiency in the calcifying mechanism which should convert osteoid tissue into true bone. The experimental studies of E. Mellanby (1918, 1919) constitute the discovery of the cause of rickets. He produced the disease in puppies by deficient diets and cured it by the use of fats containing the antirachitic vitamin. Meanwhile the antirachitic power of ultra-violet irradiation was discovered by Huldschinsky (1919). In children suffering from severe rickets he demonstrated by radiograms the healing effects of the mercury vapour quartz lamp and of sunlight. In 1924 it was discovered that certain foods developed antirachitic powers when exposed to ultra-violet irradiation (Hess and Weinstock). It has since been possible to cure rickets in children by feeding them on irradiated foods. It is the sterols in such foods that can take on antirachitic potency, in particular ergosterol, for vitamin D is a derivative of this substance (Rosenheim and Webster, 1927). In the case of the skin the antirachitic action of ultra-violet irradiation is probably due to the synthesis of vitamin D from the ergosterol which it contains. In 1930 Webster and his co-workers isolated vitamin D in pure form. They extracted ergosterol from yeast and irradiated it in alcoholic solution as it passed through quartz tubes. They then purified the irradiated ergosterol.

The pure vitamin is called calciferol from its power to induce calcification in tissues, especially in osteoid tissue. It is 300,000 times as potent as cod-liver oil weight for weight. The daily requirement for health has been estimated as 0·075 mg. Its physical and chemical properties are quite well worked out and it can justly claim to be the first vitamin standardised on a chemical and physico-chemical basis. The isomeric change responsible for the conversion of ergosterol to calciferol is at present only a matter for speculation; the synthesis of either substance presents problems of extreme technical difficulty.

The blood chemistry is comparable in experimental rickets of rats (McCollum, 1921), in children with rickets (Howland and Kramer, 1921), and in women with osteomalacia (Miles and Feng, 1925). The plasma phosphorus and sometimes the serum calcium is diminished. Adequate treatment restores the low figure to normal. In the absence of vitamin D the utilisation of calcium and phosphorus is impaired. The low blood phosphorus or calcium is promptly restored to normal by the use of cod-liver oil, calciferol, or ultra-violet irradiation. At the same time ossification begins to proceed normally.

Unfortunately those foods that contain generous supplies of calcium or vitamin D are either not generally popular or are rather expensive. They include milk, butter, cream, sardines, sprats, herrings, and green vegetables. It is certain that the majority of people living in towns run the risk of getting insufficient supplies of vitamin D. Except for pregnant and lactating women, adults probably do not need much, but not so the children. Cod-liver oil should be given daily throughout the winter months to children, in whatever social class; during the summer the skin should be slowly browned by exposure to the sun. E. Mellanby (1922) has proved that cereals are rickets-producing, partly because they contain an anticalcifying substance which interferes with calcium and phosphorus relations, and which he has called a toxamin, and partly because they lead to increased growth without at the same time supplying to bone a sufficiency of calcium, phosphorus, and calcifying vitamin. Those cereals which are relatively rich in calcium and phosphorus, such as oatmeal and wheat germ, are specially rickets-producing. This work on the rickets-producing effect of cereals has recently been further confirmed by György (1933), who found that maize meal was more potent in this respect than oatmeal. These discoveries have an obvious bearing on the treatment of rickets in children.

In the treatment of osteomalacia Maxwell (1930) states that given cod-liver oil, good food, and sunlight, the majority of the patients will slowly recover. He finds that most cases require 1–2 oz. of cod-liver oil daily, together with calcium lactate. The cure is permanent, provided the patient takes reasonable care. Some of his patients were found to be well after seven years; others stood the test of a further pregnancy without recurrence of symptoms. So far as China is concerned, this is not the whole story. Poverty is widespread, and until China gets rid of banditry and civil war osteomalacia will remain. What the Chinese want to-day is flocks and herds,

* Lecture to the Torquay and District Medical Society on March 7th.

milk and meat, with security of life and property (Maxwell, 1923). In India the problem is much more difficult, and emancipation of women must see the end of the purdah system before modern knowledge can be applied as it should.

Maxwell (1935) has proved that rickets may occur in antenatal life. Working in China, he took radiograms of the bones of the new-born babies of osteomalacic mothers and demonstrated the typical changes of rickets in the metaphyses. It is of some importance, too, that babies of osteomalacic mothers do get rickets in postnatal life. There is no doubt that the old reports denying the coexistence of osteomalacia and rickets in the same areas are fallacious. Rickets has now been found plentifully in children, where osteomalacia is well known, in Japan (Ogata, 1913), China (Tso, 1924) and India (Green-Armytage, 1928).

Mention must here be made of the influence of diet on the structure of teeth. The occurrence of hypoplasia of the teeth, with defects both in the enamel and the dentine, has been recognised for years in rickets. Such malformations are by no means exclusively of rickety origin, for they occur in other disturbances of metabolism. According to a number of authors a lack of vitamin C leads, in guinea-pigs, to defective teeth (Zilva and Wells, 1919). The changes here commence in the pulp, the dentine being affected later. M. Mellanby (1928) has studied the teeth in dogs and in children. On a diet deficient in vitamin D, particularly if it was rich in rachitogenic cereals as well, the dogs developed severe hypoplasia of the teeth, whereas the controls receiving antirachitic substances in addition had sound teeth. She showed that in children energetic administration of cod-liver oil or irradiated ergosterol lessened the incidence of such defective teeth and of the caries to which they are subject. Further, even in the presence of defective teeth, caries occurred far less readily in children so treated (Mellanby and Pattison, 1928). In two groups of school-children, one group treated and the other not, the average incidence of caries was respectively 1·4 and 5·1. M. Mellanby showed that in dogs dental defects can occur in the first dentition as a result of a deficiency of vitamin D in the food of the mother. Walkhoff (1929) has demonstrated in guinea-pigs a similar effect in the case of vitamin C.

Aphosphorosis and Osteomalacia in Animals

In recent years veterinary pathologists have investigated the skeletal diseases of domesticated animals, using the experimental method. Their work has thrown considerable light upon disorders of nutrition in general.

Styfsiekte, or "stiff-sickness," is a disease of South African cattle in which the animals develop an intense craving for bones, a symptom which is termed osteophagia. It shows itself in retardation of growth, stiffness, lameness, and spontaneous fractures. In the affected areas the soil and grass are deficient in phosphorus, so that hay may contain less than one-fifth the normal amount of phosphorus. Theiler, Green, and du Toit (1927) have reproduced experimentally "aphosphorosis," or clinically recognisable phosphorus deficiency disease, and have shown not only that it is identical with the naturally occurring South African disease, but also that its histological characteristics are those of osteomalacia or rickets. Sunlight is apparently unable to prevent its occurrence, but the routine use of bone meal abolishes osteophagia and styfsiekte and leads to an increase of the milk yield of cows, better calves at birth, and more rapid growth of young stock.

Theiler (1934) has also been able to confirm the view that the disease known as "equine osteomalacia" is not strictly osteomalacia at all, but osteodystrophia fibrosa, a disease more comparable to osteitis fibrosa of man. A survey of the experimental data makes it clear that the main cause of this disease is a diet of low-calcium, high-phosphorus content. The bone diseases of domesticated animals, rickets, osteomalacia, and osteodystrophia fibrosa, may all be regarded as dietary deficiency diseases. Deficiency of phosphorus leads to rickets and osteomalacia in cattle, excess of phosphorus and inadequate calcium to osteodystrophia fibrosa in equines, and deficiency of vitamin D to rickets and osteomalacia in dogs. The significance of mineral balance, however, is not the same for all animal species. They differ in their physiological reactions. A ration which produces osteodystrophia fibrosa in the horse does not produce it in cattle. Indeed, that disease is apparently unknown in the bovine.

Xerophthalmia

It is recorded in the Papyrus Ebers that night-blindness was recognised and treated with liver a thousand years before the time of Hippocrates. Keratomalacia was first clearly described in England in 1827, and it soon became well known in emaciated infants with diarrhœa. In 1850 a French country doctor in the neighbourhood of Bordeaux cured night-blindness in a young boy by using cod-liver oil (Despont, 1858). Between 1854 and 1857 he treated what he called epidemics of this condition occurring in peasants. He was struck by the specific action of cod-liver oil, and wondered to what constituent this was due. He came very near to the truth when he pointed out that the effect could not be due to its ordinary food value because it worked in such small doses. He records cures in 14 cases, in which the patient was better usually in three days, and always before the tenth day. He afterwards found the condition to occur in seamen on long voyages and in soldiers in barracks. In 1863 Bitot described a lesion of the conjunctiva peculiar to xerophthalmia. He was working in a foundling hospital in Bordeaux. The lesion consisted of whitish or yellowish foam-like spots resembling mother-of-pearl situated on the bulbar conjunctiva just outside the cornea. They were quite small, and looked as if they would easily brush off with a movement of the lids, but actually remained unchanged when the lid was gently rubbed over them. He found that their appearance preceded night-blindness, and he recorded their complete disappearance after the sight returned to normal.

Xerophthalmia is still common in many countries, including Russia, India, China, Japan, Central America, and Labrador. It was widespread in Germany, Austria, and Denmark during the time of privation following the war and during the war. In 1917 Bloch showed that many infants in Copenhagen suffering from general malnutrition and xerophthalmia could be cured of both by the use of cod-liver oil. There is a marked seasonal incidence, nearly all the cases ocurring in March and April. The first eye symptoms are dryness of the ocular conjunctiva, which becomes wrinkled and shrunken. Later Bitot's spots appear. The disease rapidly spreads to the cornea, which becomes dull, uniformly hazy, and insensitive. Later a greyish necrosis of the cornea sets in, followed by ulceration. This is called keratomalacia.

Denmark exports most of its dairy produce, especially butter. Early in the war butter fetched high prices and the Danes were left with margarine and lard, substances deficient in vitamin A. By

the end of 1917 xerophthalmia assumed grave proportions, and the State intervened, taking over control of all butter, which was rationed and sold at prices within the reach of all. A sharp decline in the incidence of xerophthalmia followed immediately. Nevertheless, there are in Denmark to-day large numbers of people who were blinded as babies in the war. Thus Blegvad (1924) collected 601 cases occurring between 1909 and 1920. Of these cases 21·5 per cent. died, 27 per cent. became blind, and 24 per cent. had serious impairment of vision in both eyes.

This knowledge comes home to us to-day when we realise that night-blindness has been found to occur in the Durham coal-fields (Spence, 1931). Boys affected complain that as dusk approaches they cannot see to compete successfully in play with their companions in the street. Bitot's spots form the most characteristic sign of the disease. All signs and symptoms are found to disappear on adding 10 c.cm. of cod-liver oil to the diet daily. Neither irradiated ergosterol nor ultra-violet irradiation has any effect. The curative substance is undoubtedly vitamin A.

The experimental work of Tansley (1931) affords an explanation of night-blindness as it occurs in vitamin-A deficiency. She followed the course of the regeneration of visual purple in normal and vitamin A-deficient rats. The visual purple was extracted from the retina by a dilute solution of digitonin and quantitatively estimated by a photographic method. She was able to show that the retinas of the deficient rats contained in every case subnormal amounts of the visual purple.

Milk, cream, butter, cheese, liver, spinach, and carrots are excellent sources of vitamin A, and a great many other common foods contain appreciable amounts. Of vitamin A we almost certainly know the structural formula. Chemists appear to be agreed that it is an alcoholic derivative of about half of the carotene molecule. It has not been isolated in the pure state, nor has a crystalline derivative so far been prepared. The daily requirement for health is unknown, but has been estimated as less than 2 mg. (Underhill, 1934).

There is some evidence that a diet devoid of vitamin A results in diminished resistance to infection, but much work remains to be done in order to establish in a more precise way this relationship between nutritional defect and susceptibility to infection. In a large-scale experiment Green and Mellanby (1928) found infective foci almost without exception in young rats brought up on diets which were complete except for vitamin A. There is also experimental evidence that vitamin A may successfully prevent the infection of animals with different bacteria (Lassen, 1932). Its most striking action is observed when the infection takes place through an epithelial surface. Large doses of vitamin A have been used in the treatment of puerperal sepsis by Mellanby, of measles by Ellison, and of pneumonia by Donaldson. Ellison (1932) tested the effects of a vitamin concentrate rich in vitamin A and D on 300 cases of measles under the age of six, using another 300 cases of similar age as controls. The mortality in the vitamin-treated cases was 3·7 per cent., and in the control cases 8·6 per cent. The vitamin treatment lowered the mortality of cases with pulmonary complications, but did not lower the otological and cutaneous complications. Donaldson (1930) reported a mortality of 8 per cent. amongst 200 cases of pneumonia receiving vitamin A; 100 control cases had a mortality of 13 per cent. It is impossible to say whether this difference is significant, and it is a fact that not all observers have been able to confirm these results.

The observation of Mellanby (1934) that peripheral nerves show signs of degeneration when the diet is deficient in vitamin A has led him to review the evidence in favour of the accepted causes of certain nervous diseases, and to suggest that the nervous lesions are really due to vitamin-A deficiency. In animals he has shown that vitamin A has a protective influence against the appearance of nervous lesions in poisoning by ergot, and he has suggested that the nervous lesions of lathyrism, pellagra, and subacute combined degeneration of the cord may be due to a similar deficiency. Only future work can show how far this is the case.

Beri-beri

At least five B-vitamins have now been identified (Peters, 1934). Of these 3, 4, and 5 are interesting scientifically, but so far they have not been shown to have any clinical application; 4 is necessary for the well-being of rats and 3 and 5 for the well-being of pigeons. There is little, if any, definite proof that a shortage of B-vitamins ever occurs in this country. Deficiency of vitamin B_1 gives rise to beri-beri, a disorder characterised either by multiple peripheral neuritis or by gross œdema, often with heart failure. Beri-beri occurs principally among the rice-eating populations of Japan, the Malay Peninsula, the Dutch Indies, and the Philippine Islands. It may also break out under conditions of starvation, famine, or siege, as it did in the British armies on Gallipoli and at Kut.

In 1928 Bray found large numbers of mysterious deaths under 1 year in the island of Nauru, a mandated territory in the Pacific administered by the Commonwealth of Australia. Forty-five per cent. of the babies born in a year died before the age of 12 months. This was due to infantile beri-beri brought about by a deficiency of vitamin B_1 in the diet of the mother. Inquiry showed that certain white officials had forbidden the native his toddy. This is a fermented sap made from the coconut, and contains large quantities of vitamin B_1. The mothers of Nauru, consuming the milled cereals offered them by the traders, had a greater need of toddy than when living on their original vegetable diet, and when it was denied them their babies died. It is probable that most strong native beers are valuable foodstuffs owing to their high content of yeast. Had it not been for the presence of a wide-awake medical officer the babies would still be dying, and yet another South Sea island would be undergoing a mysterious depopulation. Fortunately timely dietary reforms were made with excellent results (Bray, 1934). Vitamin B_1 was added to the mother's diet and every infant from birth was given each day a teaspoonful and a half of toddy yeast—the yeast which grows in the sap of the coconut spathe. As a result the infantile death-rate dropped from 450 per 1000 births to 92 per 1000 within a year, and this figure was maintained during the five succeeding years, while the birth-rate increased by 60 per cent. During six years after the introduction of these measures there was not a single maternal death in an average of 65 births per year.

The distribution of B-vitamins in nature is wide, and they are not easily destroyed by cooking. Eggs, yeast, and wholemeal bread are potent sources. Vegetables, fruit, milk, and animal organs all contain good supplies, and meat less but still appreciable amounts. Vitamin B_1 has been obtained in a crystalline and probably nearly pure form by several investigators. There is some difference of opinion as to the purity of the various crystalline products, which have been made from rice polishings, wheat germ, and yeast. Details of the structure of the molecule are at present largely a matter of speculation.

Pellagra

First observed more than 300 years ago, pellagra has now been described in many countries, including Italy, Spain, Rumania, and Egypt. It was not recognised in the United States until 1908, but since that date hundreds of thousands of cases have been recorded, principally in the southern States. It is

characterised by symmetrical skin eruptions, sore mouth, diarrhœa, subacute combined degeneration of the cord, and ultimately mental symptoms. It is a disease of poor people subsisting usually on a maize diet. Its occurrence in populations eating mainly wheat or rice is something of a rarity. The association of pellagra with maize consumption led to two theories, the first that the disease might be caused by a lack of protein of high biological value, and the second that it might be due to a toxic substance derived from maize. The proteins of maize have been shown to consist to the extent of 58 per cent. of zein, the notoriously incomplete protein lacking the important amino-acids tryptophane and lysine. The work on zein of Osborne and Mendel (1913) shows conclusively that young animals fed on diets containing zein as the sole source of protein could not maintain their weight unless tryptophane was added, and were unable to grow unless lysine was given. The observed good effect on pellagra of adding meat, milk, and eggs to the diet can therefore readily be explained as due to the advantage of giving a richer variety of essential amino-acids.

More recently it has been shown that yeast extracts have a dramatic effect on the symptoms and signs of pellagra. The results of experimental work with rats enabled Goldberger (1926) to identify the pellagra-preventive substance in yeast as vitamin B_2. To fit these facts Chick (1933) has formulated the following theory: pellagra is caused by a toxic substance derived from the maize diet, which can be corrected by sufficient "good" protein, or perhaps by sufficient vitamin B_2 (which is found to accompany the "good" proteins).

It has recently been suggested (Minot, Strauss, and Cobb, 1933) that alcoholic polyneuritis may be regarded as a deficiency disease analogous to the neuritis of beri-beri. The alcohol addict tends to neglect other foods, and can rarely be said to enjoy a good diet; in addition absorption is impaired in the damaged intestinal tract. Alcoholic pellagra is frequently seen in the United States, and the connexion between alcoholism and pellagra has been recognised in Rumania (Aykroyd, 1933) in districts where pellagra is endemic. Here the possibility of a toxic factor in maize should not be overlooked, for alcoholic pellagra became much commoner in America during the Prohibition period in which illicit whisky was distilled principally from maize products. Further, the disease is almost unknown among alcohol addicts in Europe in districts where spirits are distilled from barley or cereals other than maize.

Pellagra is rare in this country. The cases met with are usually secondary to gastro-intestinal disease. In 1925 Bender described three cases of pellagra secondary to lesions of the stomach interfering with nutrition. This paper indicates clearly for the first time the sequence of events and the apparent gastro-intestinal contributing cause of the pellagra. Especially is this true of one of his patients who developed pellagra while being fed through a jejunostomy tube for the cure of a non-malignant gastric ulcer. In 1930 Ellis noted the occurrence of pellagra secondary to tuberculous enterocolitis, with severe diarrhœa in a boy of nine. Simpson (1935) has recorded the complete cure of a case of secondary pellagra by the use of a concentrate of vitamin B_2 prepared from egg-white. The patient was a woman, aged 46, who had developed secondary pellagra two years after an extensive partial gastrectomy for duodenal ulcer.

The distribution of vitamin B_2 among natural foodstuffs is similar to, though not identical with, that of B_1. There are many quantitative differences. The embryo and bran of cereal grains are rich sources of B_1 but are poor in B_2. Egg-white is the one foodstuff yet discovered which contains B_2 unaccompanied by B_1 (Chick, 1930). Vitamin B_2 has lately been divided by Kuhn (1933) into two fractions, one of which is crystalline and is believed to be one of the flavines. Ovoflavine from egg-white is a yellow substance with a green fluorescence, and is highly sensitive to light, a point which may be of importance in relation to the light sensitivity of pellagrins. This work is a striking development of the discovery of vitamin B_2 in egg-white.

Scurvy

It was common knowledge, even in the fifteenth century, that scurvy occurred after deprivation for long periods of fresh foodstuffs. In 1779 the Channel Fleet had 2400 men disabled by the disease after a cruise of only ten weeks. In 1795 introduction of lemon juice into the British Navy as a routine ration led to the disappearance of scurvy amongst sailors. We now possess exact knowledge as to the vitamin C content of various foodstuffs. The juices of lemon, orange, and onion are very rich sources of vitamin C; swede and tomato come next, whereas lime juice, grape juice, potato, carrot, and milk are low down in the list. Vitamin C is destroyed by heat, by oxidation, and by alkali. An acidic substance like lemon juice retains its antiscorbutic activity for a long time, even in the presence of atmospheric oxygen. It should be realised that the heat used in the manufacture of dried milk destroys vitamin C, and that green vegetables should not be cooked with sodium carbonate or bicarbonate.

The story of the chemistry of vitamin C is singularly full of paradoxes and dramatic surprises. Up to four years ago it was generally agreed to be the least stable and the most elusive of all the vitamins. Lemon juice has long been known to possess a remarkable chemical reducing property, but this was always dissociated from the properties of vitamin C. In 1928 Szent-Györgyi isolated from the suprarenal gland hexuronic acid, and concluded that it is identical with "the reducing substance present in active vitamin-C concentrates." In the same year Tillmans made use of this chemical reducing property—the indophenol reduction test—to distinguish fresh from stale or artificial fruit juice. In 1930 he showed that the indophenol titre generally runs parallel with vitamin-C activity. In 1932 he postulated the identity of vitamin C with Szent-Györgyi's hexuronic acid. Later in the same year Waugh and King isolated from lemon juice a substance which closely corresponded with the hexuronic acid of Szent-Györgyi, and showed that daily quantities of 1 mg. prevented scurvy in guinea-pigs. The identity of this hexuronic acid with vitamin C has since been confirmed, and in 1932 Haworth and Hirst synthesised it and called it ascorbic acid to distinguish it from other hexuronic acids.

In the green pods of the Hungarian paprika, *Capsicum annuum*, Szent-Györgyi discovered what is now the richest known source of vitamin C. These pods contain weight for weight four times as much vitamin C as orange or lemon. In 1933 Parsons showed that ascorbic acid would cure infantile scurvy, and Schultzer that it would cure adult scurvy. The protective dose for an adult is less than 50 mg. a day. One gramme would suffice for more than three weeks. In the summer of 1934 the British Graham Land Expedition left England for the Antarctic and the

Oxford University Ellesmere Land Expedition for the Arctic. In each case the equipment included small tubes containing tablets of ascorbic acid for the use of sledging parties. Clearly the problem of transport and storage of vitamin C for remote expeditions is completely solved.

Scurvy is characterised by changes in capillary endothelium, leading to hæmorrhages, and by diminished activity of hæmopoiesis. Thus anæmia may occur apart from hæmorrhage. This anæmia responds to vitamin C and the response is specific, for it does not occur to iron or liver (Mettier, Minot, and Townsend, 1930). In infantile scurvy the bones are affected. In addition to subperiosteal hæmorrhage there is cessation of osteogenetic activity, arrest of endochondral ossification, but no deficiency in the calcification of the matrix of cartilage. These changes result in osteoporosis, sometimes with spontaneous fracture.

Occasionally scurvy actually comes on while the patient is under medical treatment. Thus Davidson (1928) reports two cases under treatment for gastric ulcer, one by the Sippy method and one by the Lenhartz method. In both cases scurvy resulted. Rapid recovery occurred when orange juice was added to the diet.

Endemic Goitre

It has been established by recent observations that in certain parts of the world there is a danger of human beings and animals failing to secure in their food a sufficient supply of iodine. The human thyroid gland contains up to 15 mg. of this element, representing an iodine content 50 times as great as that of any other tissue. The daily iodine requirement of an adult is at the most 0·05 mg. In 1926 Harington established that thyroxine was a phenyl ether of tyrosine containing four iodine atoms. He then synthesised it. A lack of iodine in the diet prevents the formation of thyroxine, and leads to hyperplasia and enlargement of the gland.

In the Yellowstone River Valley there was at one time a loss of approximately 1,000,000 young pigs and numerous lambs, calves, and colts each year as the result of thyroid disease. Owing to the shortage of iodine in the soil, sows had goitres and gave birth to litters of dead hairless pigs showing great enlargement of the thyroid gland. This most serious problem in animal production was studied by Smith (1917) who found that it was only necessary to administer sodium or potassium iodide to the pregnant animals in order to prevent the condition.

Keith (1924) studied the problem of goitre in the Pemberton Valley, British Columbia. At the lower end of this valley is an Indian reserve, peopled by about 150 Indians. In the Indian village no sanitation has ever been attempted, but salmon is eaten in quantity. No case of goitre has ever been recorded among these Indians, the reason being that the salmon provide iodine obtained from the sea. White settlers noticed as they ascended the valley that the incidence of goitre and fœtal athyrosis increased in their animals. All hens, ducks, and turkeys brought into the valley appeared to thrive but their eggs, though producing embryos, failed to hatch out. Almost every woman and many of the men coming into the valley would develop goitre within a few months or a year. All the babies born in the district had goitre. The use of iodine was recommended and it acted in a miraculous way; all the goitres disappeared from the animals and no further trouble in rearing stock or fowls occurred. Any resident with a goitre took a little iodine until it disappeared. The same effect was obtained by drinking the milk of cows receiving iodine. It cost $2 a year for iodine to keep 100 cattle, 12 horses, 30 pigs, 200 chickens, and all their progeny free from goitre. It is now impossible to find a goitre anywhere in the whole valley, either in animal or in human being.

In at least five regions where goitre is endemic contrasts of the iodine content of the diet with the incidence of goitre have been made for goitrous and non-goitrous districts. There is complete agreement between these surveys—namely, that a striking inverse relationship exists between the content of iodine in the diet and the proportion of goitrous individuals among the total population. The evidence associating undue lack of iodine in the diet with prevalence of endemic goitre strongly suggests a causative relationship between the two, but it does not afford final proof that lack of iodine can be the sole cause of this goitre. There is good evidence that such a goitre can arise from other causes, but there is overwhelming evidence that in communities where the diet contains a sufficiency of iodine such endemic goitre is extremely rare.

In certain regions in the Himalayas McCarrison (1927) has found that drinking-water relatively rich in iodine does not prevent the occurrence of endemic goitre in the presence of a high degree of bacterial impurity. Further the substitution of a bacteriologically pure for an impure water has caused the rapid and complete disappearance of the disease from a place where it has been endemic for 70 years, although the new water-supply contains less iodine than the old. He claims to have induced goitre in man by the administration of sediments from contaminated drinking-water and to have cured it by intestinal antiseptics. Animal experiments have suggested a goitrigenic action of cabbage. The active material was believed to be a glucoside. It is known that cyanides are components of the glucosides in certain vegetables. Hence Marine (1932) injected various organic cyanides into young rabbits and goitres were produced.

It seems therefore that endemic goitre can arise from more than one cause, including lack of iodine, some goitrigenic factor in cabbage, and a water-borne infective agent. The important thing is that iodine acts as a shield against endemic goitre, and iodine prophylaxis is the most important preventive measure. This usually takes the form of legislation ensuring the addition of minute amounts of iodine compounds to table salt. The proportion used in Switzerland is five parts (of potassium iodide) per million, and in New Zealand four parts per million. At the present time iodised table salt in different countries varies widely in its iodine content. Thus that used in Canada contains 20 times as much iodine as the Swiss supplies. The excellent results of Swiss prophylactic measures suggest that the proportions used in Switzerland and New Zealand are of the right order.

Nutritional Anæmias of Infants

An anæmia of hypochromic type occurring equally in both sexes has been known at various times as pseudo-chlorosis of infants, alimentary anæmia, and cow's milk anæmia. It is due at least partly to inadequate iron intake. Milk is notoriously poor in iron, cow's milk more so than human milk.

Mackay (1931) has shown that 40 per cent. of breast-fed babies and 70 per cent. of artificially fed babies in the hospital class are anæmic. She was able to cure this anæmia by adding to their feeds iron and ammonium citrate. A solution of 1½ grains to a teaspoonful of water was prescribed and instructions given to the mother to add this to the feeds, beginning with a few drops and increasing gradually until a teaspoonful was given with each feed. Gradual increase of the iron dosage is essential, otherwise the infant may develop colic, vomiting, or diarrhœa, and the treatment might then unfortunately be

stopped. The mother must also be warned that the stools will be dark in colour. Certain proprietary brands of infant foods are now available in which iron and ammonium citrate has been incorporated in suitable amounts.

The presence of anæmia in an infant reduces its resistance to such bacterial infections as otitis media or pyelitis. If such infection is of sufficient severity to lead to systemic disturbances, this in turn is likely to increase the severity of the anæmia. In such ill babies it is necessary to begin the administration of iron very gradually, but ultimately doses of grs. 5 to 10 of iron and ammonium citrate daily should be given. There seems little doubt that the prophylactic administration of iron at an early age leads to a considerable diminution in child morbidity, and its use should be encouraged, especially among artificially fed infants.

Anæmia is perhaps less common in the babies of the wealthier classes. There would be little need for iron therapy in infants if all women could be given an adequate diet during pregnancy, and if the milk and cereal diet of infants were to be supplemented at the age of nine months with meat, eggs, and green vegetables.

Idiopathic Hypochromic Anæmia

Recent studies have shown that idiopathic hypochromic anæmia is a deficiency disease (Kaznelson, 1929; Witts, 1931). The term hypochromic refers to the pallor of the red cells, or in other words to the low colour-index. In hypochromic anæmias the red marrow is actively producing red cells from normoblasts. The mechanism at fault is not the production of the red cell stroma but the provision of hæmoglobin to fill that stroma. This is the business of iron metabolism. Idiopathic hypochromic anæmia is probably due to a deficiency in the power of the alimentary canal to deal with iron in such a way as to make it available in hæmoglobin production. It occurs almost invariably in women, and especially in the childbearing period of life. The patient is tired and breathless, the ankles become puffy, the tongue may be sore, difficulty in swallowing may occur, the hair begins to fall out, and the finger-nails are brittle, tender, and often concave, a condition called koilonychia. Severe dyspeptic symptoms are occasionally found; amenorrhœa is common. Achlorhydria is frequently present. Its significance is seen in the fact that iron is best absorbed from an acid medium. The normal diet provides only a small positive balance of iron, especially for women who are menstruating and bearing children, and this soon becomes a deficit if the diet is poor and absorption is diminished by achlorhydria. In one-third of all cases the spleen is palpable. It is firm and soft, and never extends more than a few centimetres below the ribs. It completely recedes beyond the costal margin on repair of the anæmia.

In treatment large doses of iron must be given. Where the hæmoglobin figure is very low the patient must receive daily grs. 90 of Blaud's pill, freshly prepared and crushed. The idea that large doses of iron cause indigestion and constipation is by no means true. The dyspeptic symptoms are usually cured by Blaud's pill within six or eight weeks. When the hæmoglobin approaches the normal figure the dose of Blaud's pill can be reduced, though it is highly probable that the patient will require to take iron always. Iron and ammonium citrate may be given instead of Blaud's pill, but the effective dose is at least double. Iron should not be given by injection, owing to the long duration of treatment and the difficulty of giving adequate doses by this route. It is important to inquire into the diet, and to see that the patient takes plenty of meat, eggs, and green vegetables.

Pernicious Anæmia

Workers at the Harvard Medical School, in one of the most remarkable researches in the history of medicine, have shown that liver and stomach contain a principle curative in pernicious anæmia (Minot and Murphy, 1926), and that this principle is normally elaborated in digestion by the stomach and stored in the liver. The normal stomach secretes a ferment which is not hydrochloric acid nor pepsin nor rennin (Castle, 1929); this "intrinsic factor" acts on the proteins of the food to produce a hæmatinic principle which is necessary for the maturation of megaloblasts and the normal delivery of red cells into the circulation. Thus pernicious anæmia is a nutritional disorder of a special sort, and may be spoken of as a conditioned dietary deficiency disease. It is a disease of the stomach with secondary changes in the marrow, for in the absence of the hæmatinic principle the red cellular megaloblastic marrow remains functionally useless.

In the treatment of pernicious anæmia liver extract must be given by injection or by mouth, and the dosage regulated by the red cell count. Extract given by injection is at least thirty and perhaps fifty times as potent as that given by mouth. There is no standard dose. Severely anæmic patients may require 4 c.cm. for a few days, the dose being reduced to one-half or less of this amount after the maximum reticulocyte response has occurred. The red cell count must then be followed, and a maintenance dose determined which will keep it at five million. In many cases the maintenance dose is 1 c.cm. a week. The most important single fact about treatment is to give enough of the material. No ill-effects of overdosage are known. Infections, arterial degeneration, and hypothyroidism may interfere with the effect of the active substance, demanding increased dosage. Larger doses are required to improve or inhibit the progress of subacute combined degeneration of the cord than to permit of normal hæmopoiesis being maintained.

Minot (1935) has observed critically over two or three years 100 cases of pernicious anæmia, including 26 with advanced subacute combined degeneration of the cord. All of these were treated with injections of liver extract. In no case did a single objective sign in the nervous system become more marked, nor did any abnormal sign develop. Certain patients who were originally unable to walk became sufficiently improved to return to work. Failure to arrest the progress of neurological lesions, like failure to restore the blood to normal and keep it there, usually means that more liver is required. No claim is of course made that parenteral therapy acts in a different manner from oral therapy. Thus certain cases treated by Minot for over eight years by the oral method have shown no progress of their neurological lesions. It is possible in many cases to use adequate oral treatment, but, speaking generally, parenteral therapy is vastly superior, more convenient, and considerably cheaper; there is no doubt that it has come to stay.

Wilkinson (1935) has had excellent results using desiccated pig stomach, starting with an ounce a day until the blood count was normal and then reducing to perhaps a quarter of an ounce every three days. His cases have been observed over periods up to six years. Of 441 patients with pernicious anæmia, 92·5 per cent. were well, 3·4 per cent. had relapsed,

3·2 per cent. had died from other causes without anæmia, and 0·9 per cent. had died with anæmia. The nervous changes due to cord involvement responded well. None had developed subacute combined degeneration when under treatment, while those who already had cord changes had shown no increase of their nervous symptoms and indeed many bedridden cases had been able to return to work.

Anæmia following Gastric Operations

Changes in gastro-intestinal function affecting hæmopoiesis may result from operative interference with the stomach. We know quite definitely that both partial gastrectomy and gastro-enterostomy are occasionally followed by anæmia. At present it is impossible to say exactly why operative interference causes anæmia at all, and the evidence is insufficient to incriminate one type of interference rather than another. There is no apparent relationship between the degree of hypochlorhydria and the severity of the anæmia, nor between the occurrence of diarrhœa and the anæmia. We now possess an explanation of those cases which remain well without anæmia for many years after subtotal gastrectomy, for the work of Meulengracht (1935) has shown that the "intrinsic factor" is produced in the duodenum as well as in the pyloric portion of the stomach.

About 125 cases of anæmia following gastric operations have been recorded in detail. Of these 25 were cases of pernicious anæmia—15 following partial gastrectomy and 10 following gastro-enterostomy—and 100 were cases of secondary anæmia. There may be a long latent period between operative interference and the development of symptoms. Thus, in one series, the average period was six years and the longest fifteen years. It is quite well established that some patients develop hypochromic microcytic anæmia, and others hyperchromic megalocytic anæmia after the same operative procedure; the reason for this is difficult to see. Perhaps a study of the type of diet taken by patients during treatment for chronic ulcer both before and after operation might show that deficient intake of essential substances plays a part. Meat and green vegetables, so essential to normal hæmopoiesis, are too often lacking from the menu of such patients. Clearly accurate hæmatological studies over many years of a large series of cases following operation would be of great interest. The incidence of anæmia following gastric operations is so small that there is no need for alarm. Fortunately, too, when it does occur the results of treatment with liver or iron, according to the type of anæmia present, are satisfactory.

Idiopathic Steatorrhœa: Gee's Disease

In 1888 Samuel Gee published an account of the "cœliac affection," giving a clear description of a digestive disorder occurring in people of all ages, but especially affecting young children. He describes in detail the pale, bulky, and offensive stools, notes the occurrence of a similar disease in India, and points out the negative character of post-mortem examinations in fatal cases.

Recent investigations of Gee's disease suggest that the condition is due to a disturbance of gastro-intestinal function resulting in deficient production, absorption, or utilisation of one or more essential factors. To some extent it shares with pernicious anæmia the characteristics of a conditioned dietary deficiency disease. It occurs in patients born in Great Britain who have never resided abroad. One or more of the following features occur; fatty stools, with or without diarrhœa; dilatation of the colon, tetany, osteomalacia, infantilism, anæmia, and skin lesions sometimes resembling pellagra. In a group of 15 cases recently investigated (Bennett, Hunter, and Vaughan, 1932) steatorrhœa and disturbances of calcium metabolism were alone common to the whole group. Changes in the skeleton were found in all cases investigated. Radiograms showed osteoporosis and often florid rickets. In 3 cases histological examination of portions of bone showed osteoporosis and osteomalacia. Tetany occurred in 14 cases and clubbing of the fingers in 9.

The blood count was either normal or showed (i) hypochromic anæmia, (ii) hyperchromic megalocytic anæmia, or (iii) erythroblastic anæmia. No relation between the type and severity of the anæmia and other symptoms was established. In 13 cases out of the 15 the serum calcium was low and in 10 the plasma phosphorus was low or normal. Calcium balance estimations showed high figures for fæcal output and very low figures for urinary output.

Treatment presents great difficulties. The steatorrhœa must be controlled by a low-fat diet. The best way to secure a low-fat, high-calcium diet is to use skimmed milk together with Casec or some other preparation of calcium caseinate. Where tetany occurs calcium lactate must be given fasting, in doses of 5 grammes three times a day. Vitamin D in a solid medium should be given in every case where there are clinical or radiological signs of rickets, osteomalacia, or osteoporosis. General ultra-violet irradiation is also of value. These measures may relieve bone pain, though any relapse of diarrhœa is liable to interfere with this good effect. Treatment of the anæmia must depend upon proper examination of the blood. Where it is hypochromic in type, large doses of iron must be given until the hæmoglobin figure reaches normal. This may occur after the use of Blaud's pill grs. 30 three times a day for eight weeks or more. Where hyperchromic megalocytic anæmia is present, injections of an active preparation of liver must be repeated until the red cell count remains at five million. The proper maintenance dose must then be worked out; it is often 1 c.cm. per week. As in the case of tropical nutritional anæmia (Wills, 1931) marmite by mouth may be used instead of liver, as much as 12·0 g. daily usually being required (Vaughan and Hunter, 1932). Whatever the form of the anæmia, it is essential to remember the importance of adequate dosage.

There is no doubt that the results of treatment are more disappointing in the adolescent and adult cases than appears to be the case in children suffering from cœliac disease. Some cases respond satisfactorily and remain well under treatment. In others all that is accomplished is the alleviation of one or more symptoms and the temporary arrest of the downward progress. It is none the less gratifying to see the great improvement in the anæmia of many of the cases, and the recovery from the pain and disability of osteomalacia in others. Often there is a great change for the good in the mental outlook of a dwarfed, crippled, anæmic patient as he is gradually relieved from his disabilities, especially the anæmia. Unfortunately one group of physical signs and symptoms may clear up completely, and yet the patient may die of inanition. Thus the pellagra-like skin lesions may heal under treatment with marmite yet relapses of diarrhœa may result in the death of the patient, the skin remaining normal.

Until quite recently there were those who held that the conception of vitamin deficiencies was false,

that the chemist would never identify accessory factors in food, and that pernicious anæmia was due to changes in the bone-marrow analogous to malignant disease and therefore quite incurable. Plain answers can now be provided. International standards and units have been adopted for vitamins A, B_1, C, and D, and vitamins B_1, B_2, C, and D exist in crystalline form. It is now a commercial possibility starting with a pennyworth of starch to synthesise from it a gramme of ascorbic acid and to sell this for a shilling, so that the explorer can carry tablets which protect him from scurvy at the cost of threepence a week. The patient with pernicious anæmia can be kept alive and well by weekly injections of liver extract costing sixpence.

However, in spite of so much ground gained our knowledge is still imperfect. Recent studies suggest that nutritional failures in man are often more complicated than the results of animal experiments would indicate. Thus in the case of vitamins there is already some evidence that nutrition of the skin depends on B_2 and A, of nerve tissues on B_1 and A, and of teeth on D, C, and A. With regard to physiological needs, we are ignorant as to the most desirable diet in childhood, at puberty, and during pregnancy, and we know little as to the optimum requirement of first-class protein and of vitamins. In pathological states such as idiopathic steatorrhœa and sprue we have only hints as to the truth. The conception of conditioned dietary deficiency diseases is clearly important, but its development is hampered by our ignorance on the whole question of absorption from the gastro-intestinal tract.

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MANDELIC ACID IN THE TREATMENT OF URINARY INFECTIONS*

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THE ketogenic diet, first introduced by Clark [1] and Helmholz [2] in 1931 for the treatment of urinary infections, has been widely adopted and has proved highly successful, especially in cases in which there is no underlying urinary obstruction. The treatment suffers however from the objection that it requires rigid supervision both of the patient and of the diet; it is therefore unsuitable for use outside an institution, and patients with chronic infection of the urinary tract are not ill enough to require in-patient treatment. Moreover the ketogenic diet is not pleasant to take, and in order to be effective it must upset the normal physiological state of the patient.

Fuller (1932) [3] showed that the effective bacteriostatic factor in the urine of patients on the ketogenic diet was β-hydroxybutyric acid and that this acid exercised, in vitro, a strong bacteriostatic action below pH 5·5. This has been confirmed by Wells (1934).[4] The administration of β-hydroxybutyric acid by mouth under normal metabolic conditions is ineffective in the control of urinary infections since the acid is completely oxidised; it has, however, been administered orally by Fuller and Colebrook [5] to reinforce the effect of a dietary ketosis and it may have a limited use as a bladder wash-out in cases of chronic cystitis. Fuller has shown that aceto-acetic acid and

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TABLE I.—BACTERIOSTATIC EFFECTS OF VARIOUS ACIDS ON GROWTH OF B. COLI IN VITRO

Acid.	Formula.	Max. pH at which 1 per cent. concentration has been found effective.	Min. concentration found to be effective at pH 5.	Remarks.
β-hydroxybutyric acid .	$CH_3.CHOH.CH_2.COOH$	pH. 5·5*	Per cent. 0·3*	The effective factor in the ketogenic diet.
β-hydroxypropionic acid	$CH_2OH.CH_2.COOH$	5·5*	—	Bacteriostatic in vitro.
Lævulinic acid	$CH_3.CO.CH_2.CH_2.COOH$	6·0	0·25	Bacteriostatic in vitro.
Lactic acid	$CH_3.CHOH.COOH$	No effect at pH 5·4	—	—
Pyruvic acid	$CH_3.CO.COOH$	No effect at pH 5·0	—	—
Benzoic acid	$C_6H_5.COOH$	6·0	—	Bacteriostatic in vitro.
Hippuric acid	$CH_2(NH.OC.C_6H_5).COOH$	5·0 (No effect at pH 5·6)	—	Slight bacteriostatic power.
Benzoylacetic acid ..	$C_6H_5.CO.CH_2.COOH$	8·0	0·1 effective at pH 5·3	Highly bacteriostatic in vitro.
β-phenyl-β-hydroxypropionic acid.	$C_6H_5.CHOH.CH_2.COOH$	—	0·2 effective at pH 5·5	Bacteriostatic in vitro.
Mandelic acid	$C_6H_5.CHOH.COOH$	6·2–6·3	0·4 effective at pH 5·1–5·2	Bacteriostatic in vitro.

* Concentrations calculated as per cent. sodium salt.

acetone have slight bacteriostatic powers, in vitro, compared with β-hydroxybutyric acid.

The possibility suggested itself that a keto- or hydroxy-acid might be found which would combine effective bacteriostatic power with resistance to oxidation in the body. Such an acid, if excreted unchanged in the urine and if non-toxic, should be able to replace the ketogenic diet. As a preliminary test, a number of acids were compared with β-hydroxybutyric acid in respect of their bacteriostatic powers in vitro. The results are summarised in Table I.

Preliminary Experiments

In all experiments urine was used as the medium. It was sterilised by filtration and the concentration of the acid to be tested and the pH were adjusted according to the experiment. The acid content was either adjusted before filtration by adding a measured quantity of the acid followed by the equivalent amount of NaOH, or after filtration by adding a measured volume of a filtered neutralised solution of the acid in urine.

Tubes containing 5 c.cm. of the medium were used in most experiments and the pH was adjusted by adding the requisite quantity of HCl or NaOH.

A measured volume (usually 0·1 c.cm.) of a culture or diluted culture of *B. coli* was added and the numbers of bacteria per c.cm. present at the start, and after 24 hours' incubation at 37° C., were estimated by plating out the cultures, either undiluted or in dilutions of 1 in 100, 1 in 10,000, or 1 in 1,000,000 in blood agar plates. The plates were layered with agar after cooling to prevent spreading, and the colonies on the plates were counted after 24–48 hours' incubation.

The cultures of *B. coli* used were the two stock laboratory cultures and also various strains of *B. coli* isolated from the urines of infected patients.

Of the aliphatic acids tested, β-hydroxypropionic and lævulinic acids were found to possess satisfactory bacteriostatic powers. It seemed unlikely that the former could escape oxidation in the body and it was therefore not further investigated. Lævulinic acid, reputed to be excreted unchanged by dogs (Weintraud,[6] 1894), was administered to two patients with pyelitis of pregnancy but with no good results. Of the aromatic acids, benzoylacetic and mandelic acids were selected for further trial. β-phenyl-β-hydroxypropionic acid was excluded owing to its inaccessibility, whilst it is known that benzoic acid given by mouth is excreted in the urine as hippuric acid, the bacteriostatic powers of which are inferior to those of the other aromatic acids investigated.

Benzoylacetic acid had the strongest bacteriostatic powers of any of the acids tested. Three grammes of the acid were given to a normal man with no toxic effects. The acid was apparently rapidly excreted in the urine which gave a strongly positive ferric chloride

TABLE II.—BACTERICIDAL ACTION OF MANDELIC ACID IN VITRO

The composite result of a series of experiments at varying pH values with cultures (18–48 hours) of different strains of *B. coli*

Volume of culture added to 5 c.cm. of urine.	Organisms per c.cm. 0 hours.	Organisms per c.cm. 23–26 hours.								
		1 per cent. mandelic acid.					0·5 per cent. mandelic acid.			1 per cent. β-hydroxybutyric acid.
		pH 5·0	pH 5·3	pH 5·4	pH 5·6–5·7	pH 5·7	pH 5·1	pH 5·4–5·5	pH 5·7	pH 5·2
0·1 c.cm. (undiluted).. ..	7,000,000–33,400,000	0	0	360,000	16 mill.	20 mill.	80	8 mill.	44 mill.	580,000
0·1 c.cm. (1/100 dilution) ..	70,000–334,000	0	0	46	24 ,,	24 ,,	0	12 ,,	34 ,,	1,400
0·1 c.cm. (1/10,000 dilution)	700–3,340	0	0	2	18 ,,	20 ,,	0	20 ,,	24 ,,	38
0·1 c.cm. (1/1 mill. dilution)	7–33	0	0	0	0	0	0	2	32 ,,	0

reaction; furthermore, the urine was rendered bacteriostatic. The acid was therefore given to two patients with pyelitis of pregnancy. The urine was maintained at a low pH (by giving ammonium chloride) to assist the bacteriostatic action of the acid, but a positive ferric chloride reaction was not obtained in either case. From a 24-hour specimen of urine from one of the cases a considerable quantity of hippuric acid was obtained, while the ethereal extract was optically active suggesting the presence of some *l*-phenyl-β-hydroxypropionic acid and indicating that the benzoylacetic acid was being broken down in the body. One of the patients was improved, neither was cured.

Mandelic acid.—This acid has been shown by Schotten (1883) [7] and Knoop (1905) [8] to be excreted completely unaltered in the urine following administration to a dog. Preliminary experiments having confirmed this fact, the bacteriostatic powers of the acid were examined further. Table II. gives the composite result of a series of experiments with mandelic acid and shows that its bacteriostatic powers compare favourably with those of β-hydroxybutyric acid.

Five grammes of the acid, administered by mouth to a dog, produced no toxic effects (beyond vomiting), and nearly 2 g. of the unaltered acid were obtained by ethereal extraction of the acidified urine. (The crude extract on purification had m.p. 117° depressed to 115° on admixture with authentic mandelic acid of m.p. 118°.)

The acid was next shown to be non-toxic to man and, in the presence of an acidosis produced by ammonium chloride, the urine following administration of the acid was rendered bacteriostatic. A comparison of the bacteriostatic powers of urine passed three hours after administration of 4 g. of mandelic acid and of control urines is shown in Table III.

TABLE III.—*Bacteriostatic Effect of Ingested Mandelic Acid*

Each specimen of urine was filtered, the pH adjusted, and 34 organisms per c.cm. (*B. coli*) added to each tube at 0 hours.

	—	pH.	Organisms per c.cm. after 24 hours.
A.	Control urine	5·1	6,000,000
		5·3	32,000,000
		5·6	18,000,000
		6·3	78,000,000
		6·6	176,000,000
B.	Urine after production of NH_4Cl acidosis.	5·25	2,000,000
C.	Urine passed 3 hours after taking 4 g. mandelic acid, in presence of NH_4Cl acidosis.	5·05	0
		5·5	0
		6·3	12,000,000
		6·8	144,000,000
D.	Control urine A. with 1 per cent. mandelic acid.	5·1	0
		5·3	0
		5·5	0
		6·3	92,800
		6·6	1,080,000

Mandelic acid thus fulfils the theoretical requirements better than any of the other acids tried. It is a hydroxy-acid, non-toxic, and excreted unaltered in the urine, which it renders bacteriostatic. The acid was therefore tried clinically, and the results have been sufficiently encouraging to warrant a preliminary report on its use in the treatment of urinary infections.

The Clinical Application of Mandelic Acid

In treating cases of urinary infection with mandelic acid, the object has been to obtain a high urinary concentration of the acid at a pH favourable to its bacteriostatic action (cf. Table II.). The routine method adopted has been to give 12 g. of mandelic acid daily in divided doses, whilst the fluid intake is limited to 2 pints. At the same time the acidity of the urine is increased by the administration of ammonium chloride. Mandelic acid is readily soluble in water and, in the form of the sodium salt, is not unpalatable. The standard mixture that has been used contains 3 g. of the acid to the fluid ounce, just neutralised by sodium bicarbonate (1·6 g.) and flavoured with lemon. One ounce of this mixture is given four times a day, while 8 cachets, each containing 1 g. of ammonium chloride, are also given during the day as with the ketogenic diet.

There is no simple test for the presence of mandelic acid in urine, but extraction of the 24-hours' urine has shown that on this dosage a satisfactory urinary concentration of the acid is obtained.

Method of extraction.—The urine was acidified with phosphoric acid, saturated with ammonium sulphate, and extracted three times with ether. The ethereal layer, dried over sodium sulphate, was evaporated and the residue dried in a weighed flask in an evacuated desiccator.

TABLE IV.—*Concentration of Mandelic Acid Excreted in Urine*

Case.	Volume of urine.	Crude extract.	Concentration in urine.
		c.cm.	g.	Per cent.
7 ..	1 ..	500	2	0·4
	2 ..	1210	6·8	0·56
	3 ..	980	3	0·3
9 ..	1 ..	640	4	0·62
	2 ..	1030	7·5	0·73
	3 ..	900	5	0·55
1* ..		59	0·6	1·0

* All specimens except this one were taken from the 24-hours' urine.

The weight of the crude extract has been taken as a measure of the amount of mandelic acid present in the urine. Table IV. shows the quantities obtained from specimens of urine from patients under treatment.

RESULTS OF TREATMENT

Mandelic acid has been used in 12 cases of urinary infection, 6 of which were cases of pyelitis of pregnancy. The results are shown in Table V., and reports of some of the cases are appended to this paper. The series is too small to allow definite conclusions to be drawn as to the ultimate value of this drug in the treatment of urinary infections, but the results are sufficiently promising to warrant a further and extensive trial.

The successful cases have mostly started to improve after a few days on mandelic acid, and their urine has usually become sterile within 10–21 days. A striking feature of the treatment has been the rapid improvement in the clinical condition of the patients. The toxic effects disappear rapidly. The patient's condition is subjectively improved, the headaches and backache diminish, and the frequency of micturition becomes less even though the urine may still be infected. The disappearance of nocturnal frequency, which is presumably due to lessened irritability of the bladder, has been taken as a rough guide to the progress of the treatment. Case 4, a girl aged 13, who for the past three years had suffered from chronic pyelitis, had persistent nocturnal frequency despite every form of medical treatment, including the ketogenic diet. After four days on mandelic acid, she slept the night through, and though organisms reappeared in the urine a few days after

TABLE V.—CLINICAL TRIAL OF MANDELIC ACID

Case.	Sex and age.	Predominant organism.	Nature of case.	Duration of infection.	Results.		Remarks.
					Clinical.	Bacteriological.	
1	M. 64	*B. coli.* *Staph. albus.*	Chronic cystitis.	About 1 year.	Cured.	Cured.	See case report.
2	M. 72	*B. coli.*	,,	,,	Improved.	Improved.	Prostatic calculi. See case report.
3	F. 22	,,	Acute cystitis.	3 weeks.	Cured.	Cured.	See case report.
4	F. 13	,,	Chronic pyelitis.	3 years.	Improved.	Improved.	Urine became sterile but relapsed. Still under treatment.
5	F. 24	,,	Acute pyelitis.	1 month.	Cured.	Cured.	Acute infection of one urinary tract. Other kidney recently removed for hydronephrosis.
6	F. 12	,,	Chronic pyelitis.	1 year.	Improved.	Improved.	Was improving and bacterial count diminished when casts appeared. Treatment stopped. Relapsed.
7	F. 20	*Staph. albus.*	Pyelitis of pregnancy.	3 weeks.	,,	,,	Postnatally, urine not sterilised by mandelic acid.
8	F. 33	*B. coli.*	,,	1 week.	,,	No effect.	Very ill with pyelitis last pregnancy. Progressing well.
9	F. 25	*B. coli.* *Staph. albus.*	Chronic pyelitis and pregnancy.	6 months this attack.*	No effect.	,,	See case report. Ketogenic diet also failed.
10	F. 22	*B. coli.*	Pyelitis of pregnancy.	1 week.	,,	,,	—
11	F. 24	,,	,,	6 weeks.	Cured.	Cured.	See case report.
12	F. 19	,,	,,	3 ,,	Much improved.	No effect.	Acute infection with pyrexia. Still under treatment.

* Infected since 1931.

it had become sterile, she had no further nocturnal frequency while she was taking the acid.

Of the 6 cases of urinary infection, unassociated with pregnancy, all have been clinically improved, while 3 have been cured. In one of the 3 cases in which this result was not achieved, the urine was reported as sterile after four to five days' treatment but later relapsed. In a second case (see report of Case 2 below) the failure to cure may have been due to urinary obstruction, the presence of which is a well-recognised cause of failure of the ketogenic diet. In pyelitis of pregnancy urinary obstruction plays an important part; of 6 such cases treated with mandelic acid, 4 have been definitely improved, 1 being cured, and 1 of the two failures was also unrelieved by the ketogenic diet. Miss G. H. Dodds, who has tried the ketogenic diet on a series of cases of pyelitis of pregnancy at University College Hospital, considers the results so far obtained with mandelic acid to be more promising. In her series of 14 cases, 4 obtained sterile urines, 2 improved but still had infected urines, while 8 did not respond at all to the treatment (personal communication). It has been suggested that the bacteria in the urine, if not rapidly eliminated, may in the course of time become more resistant to the bacteriostatic agent. Intermittent therapy with mandelic acid is therefore being tried in the treatment of resistant cases.

Mandelic acid has so far only been tried on one case of acute pyelitis of pregnancy with a high temperature; the result has been promising.

One of the main causes of distress to a patient who has once had a urinary infection is the fact that such infection is very liable to recur. Such relapses appear (see report of Case 1) to respond favourably to a short treatment with mandelic acid, and it is likely that an occasional course of the acid may diminish their frequency.

Certain precautions have been observed in the clinical trial of mandelic acid. It is of course necessary, just as with the ketogenic diet, to control the urinary pH by estimation with methyl red. It seemed possible, since mandelic acid is foreign to the body and is not metabolised, that the treatment might cause renal irritation, and specimens of urine have been repeatedly tested to note any occurrence or increase of albuminuria. In two cases, granular and hyaline casts and an occasional red cell, previously absent, were found in the urine following improvement on mandelic acid therapy; in both cases the treatment was stopped, and within a few days the casts disappeared from the urine. One of these cases was a woman, aged 24, who had infection of one urinary tract, the other kidney having been recently removed for hydronephrosis. She had had some renal infection as a child. The other case, a girl aged 12, had had chronic pyelitis for over a year and was receiving mandelic acid while in hospital for treatment of a chronic abscess. She was one of two cases in which an increase in albuminuria was noted. In the other case, the reappearance of albuminuria was probably not due to the mandelic acid (see report of Case 4). Mandelic acid has been given to a patient who was known to have albuminuria following renal disease in pregnancy, and there was no evidence of increased renal damage; it has been given daily over a period of one month to a case of pyelitis without producing any albuminuria, and it therefore is not a general renal irritant. The exact significance of the casts in these two cases is thus not yet clear, but their occurrence must be taken as a warning that, at present, care should be exercised in the use of mandelic acid in the presence of any renal impairment, and that in all cases a watch should be kept on the urine. No other complications due to the acid have been noted, beyond some buzzing in the ears and temporary deafness of which two or three patients have complained.

Though Pribram (1904)[9] showed that this acid was an effective diuretic in animals, no reference to its use in clinical medicine has been found. For

the purpose described in this paper it can readily be used in ambulatory treatment, and it does not upset the patient. The treatment is not expensive. One kilogramme of the acid, which is an ordinary commercial product, costs at present 70*s*., so that treatment for ten days with 12 g. a day costs about 8*s*. 4*d*. This is not more expensive than the ketogenic diet which requires not only special foodstuffs but also expert preparation.

CASE REPORTS

CASE 1.—A doctor, aged 64, had suffered from chronic cystitis for over a year. He had had several acute attacks, with pain, shivering, marked frequency of micturition, and rises of temperature, and following the last flare-up in April, 1934, the condition had become chronic. The urine was always turbid and contained large numbers of pus cells and *B. coli* and also some staphylococci. The cystitis persisted despite various forms of medical treatment.

On Dec. 3rd, 1934, he started taking mandelic acid (12 g. in die) and ammonium chloride, whilst carrying on his usual work. Ten days later the urine was much clearer and the growth markedly decreased, and after 17 days on the drug, the pathologist's report showed "few pus cells in the centrifuged deposit. Cultures give a very few colonies of *B. coli* and a few *Staph. albus*. This is the best specimen since the urinary condition started." The mandelic acid was stopped and three weeks later the urine was clear, with no deposit, a very few leucocytes were seen in the centrifuged deposit, and on culture it gave only a few colonies of *Staphylococcus albus* and no *B. coli*.

The patient was seen again nearly three months later. During that time he had had two slight relapses with frequency and bacilluria, but in each case three or four days' treatment with mandelic acid had caused a complete recovery and for the past month he has been symptom-free with no treatment. The last specimen of urine examined on March 20th was clear, contained no pus cells, and was sterile on culture.

CASE 2.—A man, aged 72, was admitted to Westminster Hospital under Dr. A. W. Stott in January, 1935, with auricular flutter and a chronic *B. coli* infection of his urinary tract.

He had previously been in hospital in November, 1933, when he was admitted for treatment of a chronic sinus following an ischiorectal abscess. While in hospital he developed a urinary infection and on examination was found to have an enlarged prostate and calculi in his bladder. He also had auricular flutter. Two stones were removed from his bladder and he passed a third shortly after discharge.

He attended the out-patient department regularly, and despite treatment with various drugs his urinary infection persisted. Though no stones were present in his bladder on his second admission, his urinary condition was unaltered. He had a number of prostatic calculi.

On Jan. 30th he started treatment with mandelic acid. His urine became highly acid and he complained of some burning pain on micturition. The urine became clearer and the number of *B. coli* fell, and on Feb. 6th culture showed only 5 colonies per drop. He was kept on the acid, but though he improved clinically, sleeping and feeling better, and though his urine became clear apart from a deposit of mucus, it always contained pus cells and it remained infected, growing between 30 and 90 colonies per drop. While on treatment he had some granular and hyaline casts in his urine, but these had been noted in his urine on a previous occasion. He always had a trace of albumin in his urine.

While his urinary infection was controlled, a further attempt to stop his auricular flutter with digitalis and quinidine was made but failed. On Feb. 28th the mandelic acid and ammonium chloride were stopped and he was placed on alkalis and free fluids. When he was discharged on Feb. 8th his urine was again turbid and contained large numbers of *B. coli*. He has recently started a second course of mandelic acid as an out-patient, and after one week's treatment there were again only 7 colonies per drop of urine on culture.

CASE 3.—A woman, aged 22, was admitted to University College Hospital under Prof. T. R. Elliott. For three weeks before admission she had had frequency of and pain on micturition. On admission she was found to have a *B. coli* cystitis and was treated with large doses of alkalis and was encouraged to drink as much as she could. She improved considerably, but her urine remained infected and she still had slight pain on micturition. On Jan. 29th her fluid intake was restricted and she was started on ammonium chloride 8 g. daily. On Feb. 1st, though feeling well, her urine was still infected and mandelic acid was started. A week later she felt perfectly well, was getting up, and had no nocturnal frequency. On Feb. 11th her urine contained a few epithelial cells, had a very faint trace of albumin, and showed no growth on culture. She was discharged, and 14 days later her urine was still sterile and she was feeling perfectly fit.

CASE 9.—A primipara, aged 25, four months pregnant, was admitted to University College Hospital under the obstetric unit on Nov. 5th, 1934, with pyelitis. She had had a dragging pain in her back, frequency, and scalding on micturition for some six months. She had been in hospital in 1931 and 1933 for treatment of a chronic *B. coli* cystitis and had had recurrent attacks of frequency and pain in her right side.

Her urine on admission was clear, an uncentrifuged drop showed numerous organisms while there were a few pus cells in the centrifuged deposit. On culture it grew *B. coli*. On Nov. 15th she was started on mandelic acid treatment, but her condition did not improve and the urine remained infected and became slightly more turbid. She was vomiting a lot, and on Dec. 3rd, following some slight uterine pains, the acid was stopped.

On Dec. 11th she was started on the ketogenic diet, but though her urine, with the aid of ammonium chloride, was kept acid, and though strongly positive Rothera and slightly positive ferric chloride reactions were obtained in her urine, she did not improve, and on discharge on Jan. 1st, 1935, her urine was still infected. She was afebrile throughout her stay in hospital and both the mandelic acid and the ketogenic diet appeared to be without effect on the infection. An intravenous pyelography showed no abnormality of her urinary tract.

CASE 11.—A primipara, aged 24, six and a half months pregnant, was transferred from another hospital to the obstetric unit at University College Hospital on March 1st, 1935. She had been treated for the past five weeks for pyelitis, complaining of pain in the back and loins, frequency of micturition, and shivering attacks. An intravenous pyelography done at the other hospital showed a well-marked hydronephrosis of both kidneys with a slight impairment of excretion in the five-minute film. No calculus was seen. She had been treated with large doses of potassium citrate, but though her general condition had improved the infection persisted.

On admission to University College Hospital she had no pyrexia, but her urine was still cloudy, contained a trace of albumin, and the uncentrifuged drop showed organisms and pus cells in plenty. On culture it grew *B. coli*. On March 6th her urine contained about 148,000,000 organisms per c.cm., and mandelic acid treatment was started. On March 9th she stated that she had felt better for the past two days, her back was not so bad, but she had some buzzing in her head. Her urine was clearer, showed only an occasional pus cell in the uncentrifuged drop, and on culture contained only 48 typical and some 800 atypical *B. coli* per c.cm. On March 13th she felt much better, had had no pain in the back for the past two days, and on culture of her urine no typical colonies of *B. coli* were seen. By March 16th, ten days after the treatment was started, she was up and walking about. She felt very well apart from a dragging sensation in her back when she was up (she had been in bed for seven weeks). Her urine was clear but contained a trace of albumin. No pus cells or organisms were seen in a centrifuged drop and there was no growth on culture. She was sent home and on April 3rd, without any further treatment (after March 18th), her urine was still sterile and she felt very fit.

(Her urine contained a trace of albumin on admission. During the first week of treatment this disappeared, but on getting up a trace of albumin reappeared for a short

time. It seems unlikely that the albuminuria was due to the mandelic acid.)

Conclusions

An attempt to discover a therapeutic agent that might replace the ketogenic diet in the treatment of urinary infections has led to the clinical trial of mandelic acid.

Mandelic acid appears to be effective in cases of urinary infection unassociated with urinary obstruction, and it is hoped that a more widespread trial of the acid may confirm the favourable impression gained from the present short series of cases.

It is a pleasure to acknowledge my indebtedness to Prof. C. R. Harington and to thank him for his invaluable help and advice throughout the course of this work. My thanks are also due to Miss G. H. Dodds of the obstetric unit, University College Hospital, to those physicians who have kindly permitted me to treat cases under their care, and to Prof. C. C. Okell, in whose laboratory the bacteriological investigation was carried out.

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ONE HUNDRED CASES OF CHRONIC ARTHRITIS TREATED BY GOLD

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IN their report[1] on the causation and treatment of arthritis and allied conditions, the British Medical Association committee say of the use of gold: "Gold preparations given by intramuscular injection have been used abroad for the treatment of arthritis, but beneficial results have not been confirmed." This statement probably has reference to the work of Umber's[2] clinic, where Solganal was used in 250 cases of infective polyarthritis; to Forestier's[3] first publication in THE LANCET, where he described the effects of Allochrysine in 48 cases of rheumatoid arthritis; to the work of Slot and others,[4] who have treated 14 cases of arthritis by solganal; and, finally, to another report by Forestier,[5] who records results in 500 cases of arthritis, using various preparations of gold. In all these communications good results and even cures are reported.

The present paper sets out the results of five years' work with three preparations of gold in the treatment of 100 cases of chronic arthritis. The actual number treated in this way is much larger, but complete records and the possibility of inspection were only available in something over 100 patients, the others being seen and dealt with as out-patients only.

THE INVESTIGATION

Selection of cases.—The term chronic arthritis is used in preference to anything more exact because, as Table II. shows, the types of joint lesion varied widely; but, so far as is known, no arthritis of specific ætiology is included—a matter of difficulty in some cases of Neisserian infection, where the resemblance to rheumatoid arthritis is often close. Otherwise no particular selection has been made, although the rheumatoid group tends to predominate; the aim being to test the effect of this treatment in as wide a range of arthritics as possible. Cases of spondylitis have not been included; nor has the sedimentation test, as suggested by Forestier, been always employed as a test of infection.

Preparations of gold used.—Three types of gold salts have been used, and most of the cases have had one course of six or more injections only, although a few have had a second or a third course at intervals of three months. In the earlier cases we used sodium aurothiopropanol sulphonate (Allochrysine: metallic gold, about 35 per cent.) in doses of 1·5 to 2·0 g., given either intramuscularly or intravenously in six doses, one a week. Later sodium gold thiosulphate (Crisalbine: metallic gold about 37 per cent.) was given in doses of 1·5 to 3·0 g. intravenously in six doses. Most recently sodium gold thiomalate (Myocrisine: metallic gold about 50 per cent.) has been employed. Up to 2·0 g. is given intramuscularly in oily suspension in graduated doses over a period of six weeks or more.

Toxicity.—There is no doubt that all these preparations of gold can give rise to toxic manifestations; and the recent observations of Holmes[6] is one with which most workers with gold will agree. From my own series I would say that whilst few patients escape without any toxic signs or symptoms, in the great majority they are slight; nor do they appear to do any better because they have been poisoned, although they like to think so. In order of frequency, I would rank these phenomena as follows:—

(1) Pyrexia and increased periarticular pain or swelling.

(2) Rashes of all kinds; macular and scarlatiniform being most common. One of my earliest cases with allochrysine was sent in good faith, as a case of measles, to a fever hospital—and accepted. All these rashes have the common features of marked irritation and desquamation, and are sometimes accompanied by so much œdema as to render the patient unrecognisable.

(3) Sore tongue, stomatitis, and diarrhœa.

(4) The appearance of what look and feel like chilblains in the fingers.

The dose or type of gold used does not seem to bear any relation to the toxic appearances, which come both early and late; some measure of control may, perhaps, be obtained by using Hepatex or Contramine, and lately I have been trying gold dissolved in calcium gluconate for intravenous use.

Arthritics who, on preliminary investigation, show albuminuria, raised blood-urea, poor clearances, or any evidence of liver defect, are not suitable for chrysotherapy; and in those who exhibit toxic features a halt should be called at once. A poor lævulose tolerance does not seem to be necessarily a contraindication, and even in cases to which gold has been mildly toxic I have gone on with the treatment without any increase in the poisoning as shown either by signs or biochemical estimations. On the other hand, emaciated arthritics of the depletive type often show a remarkable general, as opposed to an articular, response to gold; and I have been struck in not a few cases of this type by the increase in weight, well-being, and even number of red blood-cells which was shown—long before the arthritis appeared to be in any way affected.

Adjuvant treatment.—In many of the more chronic cases, all known types of treatment for arthritis had already been tried without success; and whilst, as Table II. shows, response to gold is roughly in inverse proportion to the duration of the lesion, a considerable number of these chronic cases exhibited in no

uncertain manner the striking superiority of this to any previous method of therapy.

Along with gold, the following measures have usually been employed—so commonly and so much as a routine as to discount the probability of betterment being due to their agency alone. In the obese, the diet was reduced in calories and carbohydrate, the former roughly to 1000 calories per diem; in the more usual type of rather under-weight patients, a full diet rich in vitamins A and D was given, but with carbohydrate-restriction in those showing a diminished glucose tolerance. If hydrochloric acid was absent from, or diminished in, the gastric juice 0·4 per cent. acid was given by mouth generously. When the course of gold has been completed, massage, diathermy, and both active and passive movements have usually been started; whilst, finally, if effusions were large and recurrent, they have been aspirated, and, wherever possible, deformities such as obstinate knee flexion have been treated by firm splinting.

RESULTS

The results are shown in Tables I. and II. On examination the records in these 100 cases did not, I felt, warrant any further analyses beyond these: no particular relationships as to improvement or otherwise were found to exist; for instance, in those cases which did or did not exhibit diminished glucose tolerance, achlorhydria, or focal sepsis. It is natural enough perhaps that no osteo-arthritics were cured, but the improvement that some of them showed was remarkable. Such factors as age, both of patient and disease, are inevitably to be related to the result and, in this series, the progressive resistance is even enough.

TABLE I

Years after gold treatment.	Total cases.	Cured.	Very much imp.	Imp.	I.S.Q.
5 years	3	1	1	—	1
4 ,, ...	18	3	3	4	8
3 ,, ...	18	2	9	5	2
2 and less ..	61	6	25	29	1

Cured, 12 per cent.; very much improved (imp.), 38 per cent; improved, 38 per cent.; in statu quo (I.S.Q.) 12 per cent.

TABLE II

Analysis of cases.	Cured.	Very much imp.	Imp.	I.S.Q.
Average age at beginning of treatment	32	49	45	56
Number of men ..	6	5	14	9
,, women ..	6	33	24	3
Average duration of arthritis (years) ..	1·58	5	5·18	7
Clinical type of arthritis—				
Osteo-arthritis ..	—	4	9	4
Rheumatoid	12	27	22	8
Menopausal	—	5	7	—
Gold used—				
Allochrysine	4	6	4	7
Crisalbin	6	16	25	5
Myocrisine	2	16	9	—

The results have been classified as "cured," meaning that both symptoms and signs of disease have gone; "very much improved," meaning that symptoms have gone although some signs remain; "improved," meaning that both symptoms and signs remain, but to a lesser extent in one or the other or both; and as those which remain in statu quo antequam. None appear to have been made worse.

SUMMARY

(1) 100 cases of chronic arthritis have been treated with three preparations of gold and watched over a number of years. (2) The preparations of gold have all proved to be toxic to some patients. (3) The adjuvant treatment has been standardised. (4) Twelve cases have been cured, 38 very much improved, and 38 improved. Twelve remain the same.

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STUDY OF A CASE OF IDIOPATHIC HYPOPROTEINÆMIA

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THE following case is reported because we believe it to be representative of an uncommon, but nevertheless definite clinical condition, the further study of which may throw some light on the site of formation of the blood proteins.

THE CASE AND ITS INVESTIGATIONS

The patient, aged 20, employed as an engineer's apprentice, was admitted to St. Thomas's Hospital in May, 1934, complaining of swelling of his face and ankles of about six months' duration.

This swelling had come on insidiously, reaching its maximum in about a month and varying somewhat in intensity subsequently. On rising in the morning it was most marked in the face, particularly the eyelids, which could sometimes scarcely be opened. During the day this subsided, to give place in the evening to considerable swelling of the feet, ankles, and shins.

Apart from occasional nocturia, present since childhood, there were no other symptoms. His general health and activity were unimpaired, and the exercise tolerance was good. Diet and appetite were entirely normal and there was no history of digestive disturbance. He had had scarlet fever 11 years previously without complications. There was no family history of a like condition, nor of cardiovascular or renal disease.

On admission he was found to be rather pale, but of normal muscular and skeletal development. There was generalised pitting œdema of the lower limbs extending up to the dorso-lumbar region. No other abnormal physical signs were discovered. Blood pressure was 94–110 mm. Hg systolic and 64–70 mm. diastolic. The urine on repeated examination never contained any albumin, red cells, or casts. The blood contained 5·6 million red cells per c.mm., with 107 per cent. hæmoglobin. The differential white count was normal, but with a total of 10,500 cells per c.mm. The teeth and tonsils were perfectly healthy. The Wassermann reaction was negative. The optic fundi were normal. The sella turcica as seen by radiography appeared of normal size and shape.

Tests for renal function gave the following figures which could not be considered to fall outside the normal limits of variation: A maximum urea clearance of 70 per cent. of the average normal figure, a creatinine clearance of 125 c.cm. per minute, and the elimination of 860 c.cm. of urine in the four hours following the ingestion of a litre of water, the specific gravity falling to 1003.

The resting gastric juice contained 0·2 per cent. of free HCl and 0·042 per cent. of combined, a total of HCl of 0·24 per cent. which rose to 0·30 half an hour after 0·5 mg. of histamine.

During his stay in hospital the intensity of the œdema varied spontaneously and considerably, his body-weight

swinging between 10 and 11 st., often varying 4 or 5 lb. in the course of a few days without obvious cause.

The picture is one of a youth of good general health and physique, suffering from a generalised œdema due to none of the more usual causes of this condition. There was no evidence of renal damage, cardiac failure, undernutrition, or anæmia. The immediate exciting cause of the œdema was, however, found in the plasma protein concentration, the following low figures being obtained :—

Total protein	4·64 g. per 100 c.cm.	(6·4 to 8·0)
Albumin	3·13 ,, ,,	(3·8 to 5·2)
Globulin	1·51 ,, ,,	(2·2 to 3·5)
Albumin-globulin ratio	2·1 ,, ,,	(1·4 to 2·2)

(The figures in parentheses are the normal limits of variation for each fraction.)

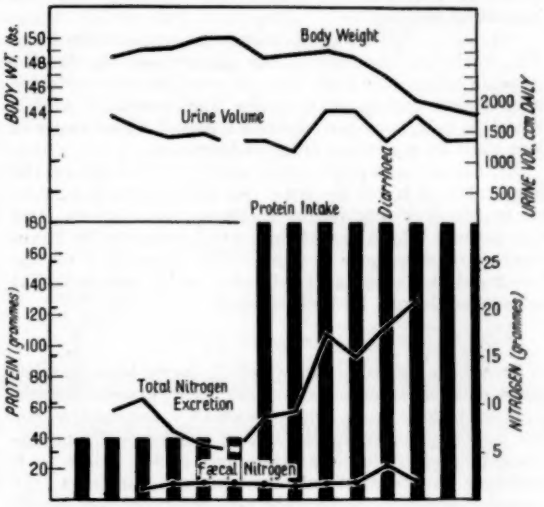
It is in the lack of any demonstrable cause for this low plasma protein concentration that we consider the interest of the case lies. Such a low protein concentration must presumably be due either to excessive loss of protein from the blood stream, to inadequate formation, or possibly to an abnormal setting of the mechanism regulating blood concentration. There was no evidence of excessive loss in this case. Moreover, in cases of hypoproteinæmia due to protein loss, the reduction usually occurs mainly, and often entirely, in the albumin fraction, producing a reduction in the albumin-globulin ratio. In the present case, however, both fractions are equally reduced, the albumin-globulin ratio remaining within normal limits. The possibility that unduly rapid breakdown of plasma proteins was occurring could not be excluded, but was considered to be improbable. It had to be concluded therefore that the primary fault lay in an inadequate formation of these proteins, either because of a deficiency of one of the substances necessary for their formation or because of some abnormality in the mechanism controlling their concentration.

That such causes of low plasma protein concentrations do exist is now recognised, but they are apparently very rarely encountered in such an uncomplicated form. In the œdematous types of nephritis, for instance, loss of protein in the urine is frequently inadequate to account for the low protein concentrations in the plasma, the conclusion appearing inevitable that in such cases plasma protein formation is impaired. The hypoproteinæmia found in conditions of malnutrition, especially when protein intake is low, and in severe wasting diseases, is also referable presumably to inadequate formation, but such possible causes were not recognisable in the present case.

That there was no lack of ability to absorb food protein normally from the alimentary canal was indicated by the following experiment (see Figure).

The patient was kept in bed, and was put on a diet containing only 40 g. of protein and 4·6 g. of salt and having a calorie value of 2500. At the end of six days the protein content of the diet was increased to 178·5 g., the calorie value and chloride content remaining as before. This diet was continued for a further period of six days. During the whole of this 12-day experiment the stools were collected daily and analysed for total nitrogen, and the mixed daily urine excreted was analysed for total nitrogen, creatinine, urea, uric acid, chlorides, the inorganic, ethereal and neutral sulphates, and occasionally for phenols and amino-acids. The curves of excretion of all these substances were quite normal and are therefore not shown here. The nitrogen content of the stools remained at about 1·7 g. per day, being quite independent of the amount of protein in the diet. On one day when the giving of a purgative evoked a diarrhœa a temporary increase was recorded.

Thus no abnormal amount of protein was being lost in the stools. There was on the low protein diet a small negative balance of protein, and on the high a considerable positive retention of nitrogen, but in spite of this there was no significant change in the plasma protein concentration. Body-weight rose slightly on the low protein diet, to fall once again on the high, but the change was scarcely large enough to be significant, and the fall was not maintained. The experiment provides evidence that protein storage readily took place, and that in its gross



Daily nitrogen excretion on low and high protein intakes.

aspects at least the metabolism of exogenous protein was not abnormal.

Further evidence of the normal exogenous protein metabolism is provided by an observation made on the day of transition from a low to a high protein diet. On this day the opportunity was taken to determine the specific dynamic action of protein on the metabolic rate. The data obtained were regarded as quite normal, and as further contributory evidence that the intermediate metabolism of exogenous protein was not seriously disturbed.

8.40 A.M.	Resting metabolic rate ..	28·7 cal/sq.m/hour.
9.25 A.M.	,, ,, ,, ..	30·2 ,, ,,
10.0 A.M.	Meal containing 170 g. of mixed protein.	
1.0 P.M.	Resting metabolic rate ..	35·2 cal/sq.m/hour.
2.45 P.M.	,, ,, ,, ..	35·6 ,, ,,

There was thus no reason to suppose that the body was suffering from an inadequate supply of protein

Date in 1934 ..	June 8	18	24	Aug. 4	Sept. 17
Diet	Low protein.	High protein.	Whole liver.	Normal	Normal
Total protein (g. %)	4·58	4·56	4·26	3·70	4·10
Albumin (g. %) ..	2·90	2·67	2·76	1·94	2·50
Globulin (g. %) ..	1·69	1·89	1·51	1·77	1·64
Alb.-glob. ratio ..	1·71	1·41	1·83	1·09	1·52
Fibrinogen (g. %) ..	0·45	0·80	0·66	—	—
Non-protein nitrogen	23·0	40·0	44·0	37·0	35·0
Urea	25·0	56·0	—	—	—
Uric acid	3·0	2·7	3·3	—	—
Calcium	10·1	8·8	8·9	—	—
Phosphorus ..	4·1	5·0	3·5	—	—

metabolites, and this view was further strengthened by the fact that whilst in hospital and again after leaving, the patient was for several weeks on a diet containing large amounts of protein (meat or liver) without this causing any alleviation of the œdema or rise in the plasma protein concentration (see Table).

It appeared necessary to conclude therefore that the fault lay in those tissues responsible for the formation of the plasma proteins or for the regulation of their concentration.

Because of our almost complete lack of knowledge of the site and mode of action of these tissues, it was not easy to proceed further with the investigation of this case. Several possible sites of formation have been suggested. Among these are the liver, the bone-marrow, the reticulo-endothelial system, and the intestinal mucosa.

Clinically there was no reason to suspect the liver. The fibrinogen fraction of the plasma protein, for the hepatic origin of which there is considerable evidence, was above rather than below the normal. And a lævulose-tolerance test showed a rise of blood-sugar of less than 20 mg. after 50 g. of lævulose.

No biopsy was performed, so that the state of the bone-marrow is not known; but radiograms furnished no evidence of any lesion involving the marrow, and the normal blood count indicated a normally functioning hæmopoietic system. The condition of the intestinal mucosa and of the reticulo-endothelial system could not be investigated.

DISCUSSION

From the investigations which have been carried out we draw the conclusion that the hypoproteinæmia present in this case, and presumably responsible for the œdema, is not due to any of the generally recognised causes of this condition, but is due solely to a deficient production of the plasma proteins. It seems justifiable to describe the condition as one of idiopathic hypoproteinæmia.

Christian, in a recent review of the causes of œdema, mentions deficient plasma protein formation as a possible cause, but makes no reference to definite cases of the condition, except in malnutrition or occasionally from myelomatous involvement of the bone-marrow.

We have been able to find on record only one other clear case of this idiopathic condition. This was reported in 1933 by Myers and Taylor of Boston. The description of their patient, an Irishman of 51 years, agrees in all essential features with that of our own. The plasma proteins were persistently low, usually below 4·0 per cent., the deficiency affecting almost equally the globulin and albumin fractions. There was the same lack of abnormal clinical findings, of evidence of abnormal protein metabolism, and of response to treatment by high protein diet or in other ways.

Another case of apparently similar type, but complicated by Graves's disease and persistent diarrhœa, has been reported by Mussio-Fournier, Castiglioni, and Anido. This was a woman of 38, with extensive œdema and a total plasma protein of 4·27 per 100 c.cm., with an albumin-globulin ratio of 2·3. But it seems possible that in this case enteritis was an ætiological factor, although the authors state that no cause was found for the low plasma proteins and œdema.

A few other cases which may possibly be of the same type have been reported in Germany. In 1922 Jungmann described a man of 28, suffering from weakness and œdema, with plasma proteins varying between 3·9 and 5·0 per cent., no cause being discovered for the low values. Meyer-Bisch also, in 1925, reported having seen three cases of œdema without albuminuria or anæmia, but with low plasma proteins, in one case only 3·4 per cent.

Common to the cases of Meyer-Bisch, of Mussio-Fournier, and of Jungmann was an achlorhydria gastrica. Myers and Taylor also reported absence of free acid from the resting juice in their case, although after histamine the acid content was normal. In our own case the gastric acidity was not abnormal. But in view of the evidence suggestive of association of idiopathic hypoproteinæmia with abnormal gastric function, an attempt was made to improve the condition of our patient with doses of Pepsac, in the hope that it would yield in a way analogous to that of pernicious anæmia. No success was obtained, the hypoproteinæmia remaining as unresponsive to this as to the high protein and whole liver régimes.

We consider it probable, however, that in such cases as this there is lacking one of the factors responsible for the formation of plasma proteins or for the control of their concentration, and it is for this reason that we believe the case to be of interest, for such a condition is seldom encountered in such an apparently uncomplicated form.

SUMMARY

A case is described of generalised œdema in an otherwise healthy man, due to low plasma protein concentration for which no cause has been found. Other apparently similar cases have been collected from the literature.

ADDENDUM

When last seen on April 10th, 1935, this youth was still at work, but still had his œdema and hypoproteinæmia with 4·4 per cent. total protein and albumin-globulin ratio of 1·38.

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TECHNIQUE OF EVIPAN ANÆSTHESIA

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THE value of Evipan as an anæsthetic is now well established, and it is in constant use in many hospitals. Some surgeons have enlarged its scope to include almost every surgical operation except prolonged intracranial procedures, while others use it for minor operations only. In dentistry it is now a well-tried and satisfactory anæsthetic. I have also found in spinal anæsthesia that the vomiting and restlessness which disturb in upper abdominal operations cease with 2–3 c.cm. of intravenous evipan.

The anæsthesia is, however, often marred by faulty intravenous technique. I have often seen numerous punctures made owing to the vein not being found, or the needle slipping out either from the patient's movements or inattention on the part of the injector. The result is that at the end of the operation there is much hæmatoma in front of the elbow and some evipan in the tissues, and the patient complains of pain in this region afterwards. More important still, the cubital veins may all be used up and obscured by hæmatoma and the surgeon asking for a little more anæsthesia at the end of the operation which the anæsthetist is not able to give. It is possible, too, that the normal work of the anæsthetist does not include much intravenous work, and they have not the facility in this direction which comes from constant practice. It is in order to eliminate all the risks of

failure that I put forward the following details of technique which, if followed, will make for the smooth working so necessary in any new method of anæsthesia.

The arm is first of all fixed upon the aluminium splint shown in Fig. 1. The splint was made to my design by Down Bros., it is padded with Dunlopillo, and the upper

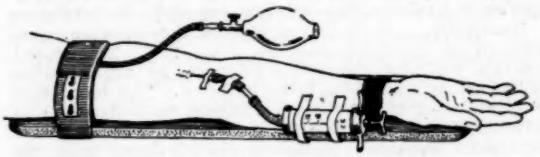

FIG. 1.—Method of fixing arm for simple evipan injection.

strap is a pneumatic armlet with a simple stud system of fixing instead of the rather troublesome method employed in most blood-pressure machines. The armlet is inflated at once before mixing the evipan solution, so as to give the veins time to swell before injecting. If a difficult injection is anticipated because of fat or other cause, then a hot-water bottle is laid over the front of the elbow to increase the dilatation of the veins and the patient is instructed to clench the fist rhythmically. The skin is painted with spirit, not iodine, as this latter might rob one of the help that the blue line of the vein gives in some cases.

The evipan syringe is of 10 c.cm. capacity except when a prolonged anæsthesia is expected, when a 20 c.cm. syringe is used. The needle is connected to the syringe by six inches of thin rubber tubing, and it is a good plan to have a small glass tube included in this to see the blood flow, but this is by no means necessary as the sensation of going into a vein with a sharp needle is unmistakable. As soon as the needle is in the vein the armlet is deflated and the injection commenced. When the first cubic centimetre has been introduced without causing any pain or bleb at the point of the needle, the latter is fixed to the skin by two small strips of adhesive, and the syringe is laid in the groove between the splint and the arm and fixed with a strip of adhesive in such a way that the calibrations can be seen easily. Now with the patient's arm immobilised and the needle independent of the syringe no fear of dislodgment need cause worry. A nurse can be deputed to hold the arm and inject a cubic centimetre as requested by the anæsthetist, who sits by the patient's head while induction is in progress.

FIG. 2.—This type of mouth prop presses the lower incisors forward.

The maintenance of the airways in the anæsthetised patient is best ensured by the type of support shown in Fig. 2, which is very practical and reliable and absolutely prevents the jaw from falling backwards. The usual short aluminium airway put between the teeth does not prevent this, and after all it is surely better for the patient to breathe through his nose even while under anæsthesia. Moreover, the pushing of the angles of the jaw forward is often done with unwarranted force, and there is some reason for regarding this trauma as the cause of post-operative parotitis.

For long operations under evipan anæsthesia I have used the following method (Fig. 3). The arm is fixed in the splint as before, and an intravenous drip saline is given into one of the cubital veins. The indiarubber tubing, 6 inches from the intravenous needle, is punctured by the evipan needle, and this time the syringe is directly connected with the needle and laid in the groove beside the arm as before. The evipan can now be injected directly into the intravenous stream as desired, and a sustained anæsthesia kept up for any length of time; for instance, in a recent case of laminectomy for 2½ hours (27 c.cm. of 10 per cent. evipan). Should the patient require the constant intravenous drip after the operation for shock, uræmia, or other cause, then the arm can be left on the splint, and any restoratives or sedatives can be injected by puncturing the intravenous rubber tube.

The intravenous splint is also of great value in urosel-ectan injections, blood transfusions (donor and recipient), novarsenobenzol injections, and all forms of intravenous treatment.

There is no detail of the technique so important as the sharpening of the needle which is done as shown in Fig. 4.

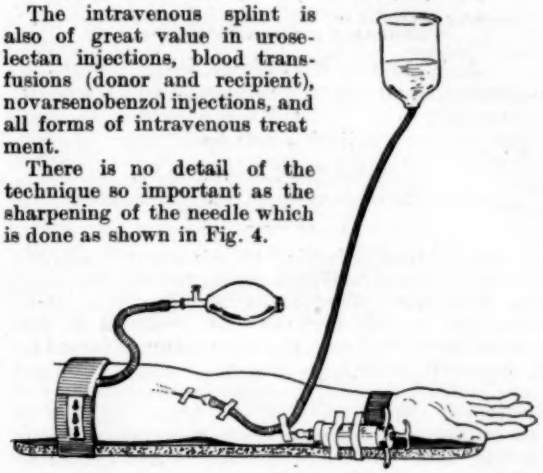

FIG. 3.—Method for prolonged administrations. A sight drip should be inserted in the tube leading from the reservoir.

The needle is inserted obliquely through a cork so that the bevel appears on the rounded surface of the cork. Then a special needle hone of Arkansas stone is drawn lightly across the bevel till the whole ring of the bevel glistens. Then the needle is pushed further through the cork, and the edges lightly stroked with the needle stone to remove any feathering of the edges which may be present. Finally, the needle is removed from the cork and drawn lightly over the finger to be sure that there is no "crochet hook" at the tip of the needle, and if this is present, it is

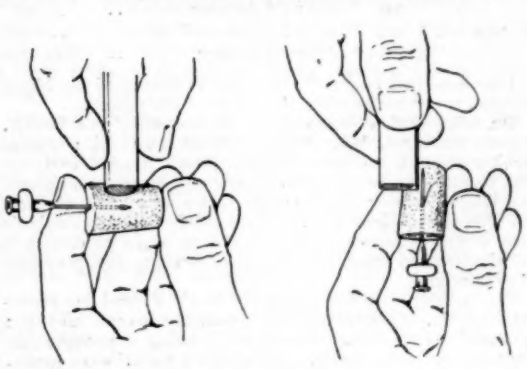

FIG. 4.—Method of sharpening needle by hone.

smoothed off with the stone. With such treatment a perfect point is assured and this makes injection infinitely easier.

If the usual needle taken at random in the theatre or ward is inspected with a magnifying glass and compared with a sharpened needle the necessity for honing the needle is made very clear.

MANCHESTER AND SALFORD HOSPITAL SATURDAY FUND.—An increase in income of £14,000 is reported by this fund, which has raised £601,313 in 28 years.

CLINICAL AND LABORATORY NOTES

FATAL ENTERITIS DUE TO SALMONELLA ORANIENBURG

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With a note by

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CASES of food poisoning in this country are due usually to *Salmonella typhimurium* (*Bacillus aertrycke*); thus in a recent paper Smith[1] mentions that of 60 outbreaks in the north-east of Scotland it was responsible for 35. Less often the condition is caused by *B. enteritidis*, while from time to time sporadic cases occur in which the infective agent is a rarer member of the group. With many of the types, infection in this country has not so far been reported, and it is thought that the following case of fatal enteritis which occurred in Bury and which was traced to the Oranienburg strain of salmonella (Kauffmann[2 3]) is worthy of record, since hitherto this organism has not been met with in Great Britain. The case was sporadic and the source of infection is unknown.

Mrs. A. was admitted to the Florence Nightingale Hospital, Bury, on Oct. 27th, 1934, as a suspected case of typhoid fever. The illness commenced on Oct. 2nd with shivering, vomiting, and headache; at first there was no abdominal pain or tenderness, but slight tenderness developed during the second week of illness. The Widal reaction on Oct. 25th was as follows:—

B. typhosus	(H)	..	nil	*S. paratyph.* B	(O)	..	nil
,, ,,	(O)	..	nil	*Br. abortus*	..	..	nil
S. paratyph. A	(H)	..	nil	*Salmonella group*		..	1/160
,, ,, B	(H)	..	nil	*Culture of clot*	..	..	negative

Diarrhœa had begun the day before taking of the blood sample, three weeks after the onset of the illness.

On admission to hospital the temperature was 100° F. and the pulse-rate 104. General condition was fair: tongue thickly coated, reddened throat, small tonsils, and the soft palate and fauces covered with sticky mucus. Heart and lungs normal; slight cough. Nervous system normal. No abdominal distension. Slight tenderness over splenic area but no enlargement of the spleen could be detected. Nil abnormal in urine, stools three or four per day, pea-soup in appearance.

The temperature fell gradually to 97° F. and the pulse-rate to 84. Cough became gradually worse and the sputum was thick and tenacious, looking somewhat like broken-down lung tissue. No tubercle bacilli were found, and while in film numerous pneumococci were present, no cultures were made. The patient's general state gradually grew worse with general loss of flesh.

On Nov. 15th there was a sudden rise of temperature to 102·6° F. with a pulse-rate of 124. The patient vomited and became dyspnœic, complaining of abdominal discomfort, but no great pain or tenderness in the abdomen was noted. On Nov. 17th the temperature had once more fallen to 97° F. Weakness was very marked and death occurred on the 21st.

Post-mortem findings.—Heart: small, muscle very flabby; no valvular or arterial disease. Lungs: hypostatic congestion of base of right lung; no evidence of tuberculosis or new growth. Liver: large and pale; gall-bladder very distended and full of bile; no gall-stones. Kidneys: normal. Suprarenals: normal. Intestines: small intestine showed patches, a foot and more in length, of inflammation and minute hæmorrhages, especially in the ileum.

Bacteriology.—Specimens of blood and fæces were again received at the laboratory on Nov. 2nd. The Widal reaction was now completely negative, no agglutination of the group salmonella being detected. The blood clot was incubated in 0·5 per cent. sodium taurocholate, and after three days' incubation growth was obtained of a salmonella organism similar to that isolated from the fæces. Direct plating of the fæces gave negative results, but from growth in 1/200,000 brilliant-green broth a pure culture of a salmonella was obtained. The organisms isolated gave the general characters of the group, being actively mobile and fermenting (with the production of acid and gas), glucose, mannite, dulcite, maltose, xylose and arabinose. Lactose, saccharose, and inosite were not fermented. Hydrogen sulphide was produced, and after a preliminary acidity in litmus milk the reaction became markedly alkaline. Indol was not formed. No agglutination was obtained with the following H sera: *S. paratyphosus* B, *S. typhimurium*, the Newport strain, *S. enteritidis*, *S. suipestifer* (European), and *S. paratyphosus* C, and the organism was submitted to Dr. Smith for typing, who reported it as *S. oranienburg*.

At the post-mortem examination a specimen of bile and a portion of the ileum were taken for examination and from both of them this organism was isolated in pure culture. On section of the ileum the mucosa showed necrosis, the blood-vessels of the submucosa were congested, and small groups of mononuclear cells were present in the submucous and muscular coats.

NOTE BY DR. SMITH

The serological examination of the strain showed that it agglutinated with the O serum for the paratyphoid C sub-group of the salmonella genus to a titre of 1/1600, and failed to agglutinate with any of the other O sera. An absorption test showed that it could completely remove the agglutinins from this serum. When tested against the H sera of the sub-group, it was agglutinated by the serum for the Oranienburg strain only, and that to full titre 1/25,000. Again, an absorption test showed that it could remove all the agglutinins. The antigenic structure of the organism is therefore represented by the formula VI, VII: mt., which corresponds to that of *S. oranienburg*.

[1] Smith, J.: Jour. of Hyg., 1934, xxxiv., 351.
[2] Kauffmann, F.: Zeits. f. Hyg. u. Infektionskr., 1930, cx., 537, and 1931, cxi., 221.
[3] Report of Salmonella Subcommittee, Jour. of Hyg., 1934, xxxiv., 333.

CRURAL PARESIS ACCOMPANYING HERPES ZOSTER

By G. P. CHANDLER, M.D. Camb., M.R.C.P. Lond.

A crural paresis associated with an attack of herpes zoster appears to be a rare event. Worster-Drought and McMenemy[1] were only able to find records of two cases in their review of the subject. But recent researches in France by Lhermitte and Nicolas,[2] Lhermitte and Vermès,[3] and Faure Beaulieu and Lhermitte[4] suggest that some paralysis may occasionally be expected to accompany this disease.

These workers have shown that the morbid process in herpes zoster is much less localised than is often thought. There is an inflammatory reaction extending from the posterior root ganglion, involving the posterior root, the surrounding meninges, and the grey matter of the posterior horn, spreading in some cases to the pars intermedia and anterior horn of grey matter and passing up and down the cord for

a variable distance. The microscopic changes consist of degeneration and vacuolation of the affected nerve-cells, with lymphocytic infiltration, vascular dilatation and hæmorrhage, the vascular changes being most conspicuous in elderly patients with poor arteries. The meninges show vascular dilatation and there is hyperplasia of the capsule of the affected posterior root ganglion. Shrinkage of the grey matter of the posterior horn may be obvious to the naked eye.

This conception of the pathology of the disease as a myelitis rather than a local inflammation in the posterior root ganglion suggests that a varying degree of paralysis may be not uncommon during an attack of herpes zoster. The occurrence of ocular palsies associated with herpes ophthalmica is not very rare. Other types of paralysis affecting the face, neck, arm, or abdominal muscles have been recorded by Hunt,[5] Masten,[6] Worster-Drought,[7] and others.

DESCRIPTION OF CASE

The patient was a gardener aged 60. He had always enjoyed good health, except for occasional colds and an attack of sciatica in the right leg twenty years ago. He was seen on Oct. 25th, 1934, with a two days' history of severe pain in the right leg. The pain was continuous but varied in intensity and appeared to be worse at night. It was described as being of a boring or gripping character unaltered by movement or rest. There was no disturbance of micturition or defæcation.

On examination he was a thin wiry man with dilated venules on the face. Temp. 98·6° F. (A.M.); pulse-rate 68. Heart not enlarged, sounds distant, arteries hard and rather tortuous. Blood pressure 160/90. The lungs, abdomen, and urine were all normal. All the cranial nerves and the fundus oculi were normal. There was slight weakness of the right triceps muscle. The abdominal reflexes were present. The right leg showed absent knee- and ankle-jerks and the plantar reflex was flexor. There was diminished power in the quadriceps, hamstrings, and calf muscles, but no obvious wasting. There was diminished sensation to pin-prick and cotton-wool on the anterior and outer part of the leg from the knee to the middle of the calf, and diminished vibration sense in the right tibia. Joint sense was normal. The left leg showed no abnormality. Romberg's sign was not present. The Wassermann reaction was negative.

Two days later a herpetic rash appeared on the anterior aspect of the right knee and on the anterior and outer aspect of the upper third of the leg below the knee. The rash pursued its usual course leaving a slight scarring. By Nov. 12th the pain in the leg was much less severe, and the rash was drying up. The patient complained of weakness in the right leg and a tendency for the right knee to give way under him when he got out of bed. There was considerable weakness of the right quadriceps and hamstring muscles and some wasting of the thigh. The right ankle-jerk was just present, the knee-jerk was still absent. No alteration in the other reflexes or in the area of analgesia.

On Dec. 12th the patient said he had returned to light work two days ago. He said that the right leg was still distinctly weaker than the left, but he was able to get around the garden. He still complained of a dull aching pain in his thigh. The power in the quadriceps and hamstring muscles of the right leg had much improved. The ankle-jerk was present but sluggish, the knee-jerk was still absent. There was no alteration in the area of analgesia. Examination of the cerebro-spinal fluid showed a trace of globulin and 0·025 per cent. of albumin. The fluid was clear in appearance and under normal pressure. The Wassermann reaction was negative.

On Jan. 25th, 1935, the patient felt well, he had lost his pain, and could walk and do his work almost as well as formerly, but the right leg still felt weaker than the left. Sluggish knee- and ankle-jerks on the right side were both obtained on reinforcement. There was still some weakness of the right hamstrings and the area of analgesia was present but less marked. Vibration sense in the right tibia was absent. On March 2nd the condition appeared to be unaltered.

DISCUSSION

In this case the eruption occurred in part of the distribution of the posterior root of the fifth lumbar nerve; it was accompanied by signs of involvement of the motor-roots of the fourth and fifth lumbar and first sacral nerves. The inflammatory reaction appears to have been of considerable extent in the region of the anterior horn, but localised in the posterior horn to the fifth lumbar segment and affecting the posterior columns to a slight extent.

If the modern view of the pathology of herpes zoster is correct and a myelitis of varying extent exists in every case, it seems probable that some degree of paresis of muscles supplied by the affected segment may occur more frequently than is generally thought, and that occasionally the major damage caused by the inflammatory reaction may fall on the anterior horn cells causing a lower motor neuron paresis affecting muscles supplied by one or more segments of the cord. This may accompany a localised herpetic rash, as in this case.

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PUNCTURE OF INTERNAL JUGULAR VEIN DURING PHRENIC EVULSION *

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THE patient was a young man with disease of the right apex and cavitation. A previous attempt at artificial pneumothorax had proved unsuccessful owing to the presence of adhesions. It was decided therefore to perform a right phrenic evulsion under a local anæsthetic, and this was done on March 14th, 1935.

After infiltration with 1·0 per cent. novocain and adrenaline a 2½ in. vertical incision was made along the posterior border of the sternomastoid. All went well, the landmarks being duly defined, till the deep fascia covering the scalenus anticus was reached. In order to expose this more clearly, the assistant, who was standing on the opposite side of the table, was told to retract the sternomastoid. This he did with the blunt hook which he had been given to retract the omohyoid, instead of the broad bladed retractor usually used for the sternomastoid, and there was an immediate gush of dark blood filling the wound. The blunt hook had perforated and torn the internal jugular vein.

The hæmorrhage was at once checked by pressing the vein forward against the sternomastoid, but an attempt to catch the torn point in a pressure forceps only led to further tearing of the vein and more copious bleeding. After some manœuvring and blunt dissection, while the fingers still compressed the vein, two large clips were placed well above and below the tear, including some of the sternomastoid muscles as well as the vein in their grasp; they were closed, but not tightly. On removing the fingers from the torn vein the hæmorrhage was found to be controlled. It was then comparatively easy to free the vein sufficiently to pass an aneurysm needle round it. This was threaded with catgut and withdrawn; the catgut loop was divided, one piece being drawn upwards above the tear and the other downwards below it, and

* Based on a communication to the section of surgery of the Royal Academy of Medicine in Ireland on March 29th.

both were tied, completely occluding the internal jugular vein above and below the injury. The operation of evulsion was then proceeded with and the wound closed with deep catgut sutures and Michel's clips. The patient fortunately was unaware that there had been any serious accident. Healing was normal and convalescence was uneventful.

Thinking over the case it is easy to see how such an accident occurred, as the assistant from his position was unable to see the internal jugular vein covered as it was by the sternomastoid, though to the operator it was a very prominent feature of the landscape. For safety's sake no hook retractors should be used, only broad ones, and in future operations this practice will be followed. By good fortune a colleague was present in the theatre at the time of the accident and rendered timely assistance both moral and physical.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTIONS OF EPIDEMIOLOGY AND CHILDREN'S DISEASES

A MEETING of these sections to which members of the Society of Medical Officers of Health were invited, took place on April 26th, with Dr. J. D. ROLLESTON in the chair. The subject discussed was the problems of

Prophylaxis in Pulmonary Tuberculosis

Dr. ARTHUR MACNALTY said that the first step in the prevention of tuberculosis consisted in a recognition of the fact that it was an infective disease. It was formerly a fatal and widespread malady affecting all classes of society. Koch's discovery of the bacillus in 1882 established the disease as an infectious one, and opened the doors to organised research. A notable advance in the production of immunity was made by Calmette and Guérin when they produced the B C G vaccine, though the immunity produced by it was admittedly transient. The human type of the tubercle bacillus was the cause of nearly all cases of pulmonary tuberculosis, while Stanley Griffith's figures gave 5 per cent. of human tuberculosis as of the bovine type. It was recently shown that bovine pulmonary tuberculosis exists in both Scotland and England. The bovine type of bacillus conveyed in milk was mainly responsible for the infection of man through the alimentary tract.

The prevention of bovine tuberculosis could be considered from two standpoints. The first was the control and possible eradication of tuberculosis in herds of cattle, especially dairy cattle. It had been estimated that not less than 40 per cent. of the cows supplying milk in England were infected with tuberculosis, and probably from 1 per cent. to 2 per cent. of them actually yielded tuberculous milk. The second heading was the prevention of the spread of the disease to human beings. Under the first heading much had been done in recent years by tuberculin testing of herds. The Tuberculin committee of the Medical Research Council had devised the double intradermal test, and this had been made compulsory for the testing of certified herds, and had passed into almost universal use. J. B. Buxton and S. Griffith were now investigating, at Cambridge, the efficacy of immunisation of calves by B C G (Calmette's attenuated living vaccine) and other antigens. As to the second category of prevention, the diminution in non-pulmonary tuberculosis was encouraging. In 1919 the deaths from the non-pulmonary form were 10,328, and in 1933 the figure had fallen to 5405. Dr. MacNalty suggested that a part of this improvement was due to a safer milk-supply.

During recent years in the campaign against tuberculosis the State had come to realise that it was not merely a medical disease—one which concerned only the patient and as such received due attention in the consulting-room of the pulmonary specialist. Many factors favoured the spread of the disease, such as occupation, malnutrition, poverty, overcrowding, bad sanitary environment, contact infection, and the influence of other diseases. Its social implications were also appreciated. Antituberculosis work was now looked upon as an integral part of preventive medicine. It was important to find not only the early case but also the primary infecting case in a household. Examination of contacts needed greater attention. Often it was not the practitioner's fault if a case were not diagnosed until it was advanced, for, as has been said, "the working man cannot afford to be an early case of tuberculosis." There was still need for the public to be taught the wisdom of seeking advice at early stages of the disease; the Public Health Act, 1925, extended the power of local authorities to educate the public on these matters. The national tuberculosis scheme depended largely on the coöperation of the general practitioner, the first line of defence in prevention. Dr. MacNalty referred to the value of collapse therapy in its various forms and sanocrysin in treatment. The after-care of cases was still a difficulty, but it had been met by Sir Pendrill Varrier-Jones in his pioneer work at Papworth, and by other village settlements for suitable patients. The mortality from tuberculosis had declined by 72 per cent. in England and Wales since the 1851–60 decennium, but there still remained much to learn about the prevention of the disease.

MORBID ANATOMY

Dr. CHARLES MILLER dealt with the morbid anatomy of tuberculosis in children. He said he had been collecting and examining post-mortem material from cases of tuberculosis up to the ninth year of age since 1909, and he gave a summary of his findings. The total number of subjects examined was 5259. Of those, 419 were either full-term still-born infants, or did not live longer than 24 hours. Among those 419 there were no instances of tuberculosis. Among the 4840 children who survived 24 hours there were 940 cases of tuberculosis, or 17·8 per cent. Of the 940, 677 were cases of undoubted respiratory infections, as also were probably 14 cases of double infection. 218 cases were alimentary infections, and 21 were primary infections of the common respiratory-alimentary tract (the region between the lips and the epiglottis).

Respiratory infections had been found to be more active, more progressive and more lethal than alimentary infections; also these were more likely to cause hæmatogenous dissemination than those of the intestinal tract. No proof was available that human tubercle bacilli were more virulent than bovine; that respiratory invasions were more serious than intestinal ones might be due to anatomical differences and peculiarities. The prevalence of tuberculosis, irrespective of the special path of infection, increased in the first five years of life, after which age it remained fairly constant. Not all caseous and calcareous lesions could be regarded as inactive, though perhaps fibrous lesions could. The importance of the invasion of lymphatic tissue was very great, and in children glandular involvement was nearly always a prominent feature. In fatal cases in children it was difficult to say whether tuberculosis

was the chief or only a remote cause of death. Among children in the first year of life the case-mortality-rate from tuberculosis was 81·4 per cent., whereas in the tenth year it was 34·8 per cent. Hæmatogenous dissemination, both general and partial, was most common in respiratory infections, and rarest in alimentary infections.

PREVENTIVE MEASURES

Dr. D. A. POWELL said that, for all practical purposes, every case of pulmonary tuberculosis could be regarded as having been derived from some other person, and hence the supreme importance of taking every means of reducing the total amount of tuberculous inoculum at large. These measures he classified as follows: (1) the diagnosis and treatment of cases of pulmonary tuberculosis while still in the closed stage; (2) the search for occult cases; (3) the conversion of known open cases into closed cases by means of treatment, either directly by collapse methods, or indirectly by general sanatorium methods; (4) personal precautions taken by the patient against transfer of his infection to others; (5) measures to disinfect clothing and belongings at home, and the patient's isolation, the latter including segregation in an institution. He considered that segregation was the most logical and expeditious method of attaining the object of limiting the spread of tubercle. Sufficient beds should be available for every patient willing to remain in an institution until he became non-infectious. Patients should be taught the great importance of the means they were able themselves to undertake, and they should be made to understand that chemical disinfection was not so valuable as thorough and regular soap-and-water cleanliness. Until it was possible to sterilise articles which tuberculous patients had used, those articles should be kept moist, so lessening the chance of dried inoculum being suspended in the air and inhaled.

Dr. GREGORY KAYNE said there still remained important gaps in the knowledge of the causes and the prognosis of the disease. The two means of prevention were avoidance of contact with tuberculous subjects, and raising the resistance of the individual to enable him to deal with such infection as he might acquire. Antituberculosis measures were not so vigorously adopted in respect of children under 5 years old as in older children. When meningitis developed it was as a complication of the recently acquired disease. He considered the prevention of infection under three headings: (1) adequate treatment of the tuberculous person in the household, (2) hygienic measures adopted in the home, (3) removal of the child from its home. The absence of expectoration was not necessarily an indication that the patient was non-contagious. The value of collapse therapy, especially in bilateral cases, could not be over-assessed. Section 62 of the Public Health Act should be used, he thought, for securing segregation of patients. The increasing of the specific resistance by B C G vaccination he regarded as important; he had seen its results in several European centres. Particularly he would like to see a more energetic study carried out on the handling of home contacts.

IMMUNISATION

Dr. REGINALD LIGHTWOOD spoke of the special danger of miliary dissemination of tubercle in the infant a few weeks only after its original acquisition. So long as there was no sure way of preventing tubercle in the very young, the separation of the infant from its mother must be considered. The Grancher system was carried out to some extent by the London County Council, and also at Hastings. The great obstacle to the Grancher separation system was the natural objection of the mother to parting with her child at this age; it was also costly. Responsible opinion now seemed for the most part agreed that B C G, properly prepared and properly administered, was harmless, and gave partial immunity when given by the mouth; the date of appearance of the immunity and its duration were still uncertain. Wallgren, administering B C G intradermally in Gothenberg, had apparently achieved such a degree of resistance that among 230 vaccinated infants who had returned to their homes, no deaths from tuberculosis had occurred. The infant mortality-rate from tuberculosis had fallen strikingly in Gothenberg since the intradermal method had been adopted. The special points about Wallgren's work were: (1) no infant was selected for immunisation until it was reasonably certain that it had not yet become infected; (2) no infant was deemed to have been effectively immunised until a positive tuberculin test resulted from B C G vaccination; (3) each case was followed up and, at intervals, subjected to clinical and radiological examination. Parenteral vaccination appeared to confer a more complete immunity than did oral methods.

Dr. ROBERT CARSWELL said that the usual division of tuberculosis into tuberculous infection, latent tuberculosis, and tuberculous disease was apt to throw too much into the background the common histological basis. It was now recognised that the Koch preparations T R and B E were agents of undoubted immunising value, which sufficed to eliminate slight or incipient tubercle. How far these would contribute to the eradication or control of the more advanced disease only careful clinical and experimental work could show.

Dr. LEONARD FINDLAY emphasised the seriousness of pulmonary tuberculosis in infancy and young childhood. In 1929 the mortality from the disease in children in the first two years of life was only one-fifth of that in 1911, whereas for persons between 25 and 45 years the diminution had been no more than 50 per cent. In the year 1800 Blackmore found, in a large number of autopsies on children, only three cases of healing tubercle, and not one actual healed case. He did not know whether this great liability to the disease in the very young meant that infants were more susceptible to it, or whether it was due to the more intimate contact of the infant with its tuberculous parents and relatives. It was of supreme importance to take all possible measures to prevent infants from becoming infected. Great authorities had proved that immunity could be harmlessly conferred; the time for discussion had gone, and action on a large scale should be taken.

METHODS OF SPREAD

Sir LEONARD ROGERS said that during his 20 years as pathologist in the largest hospital in India his attention was drawn to the serious contribution which was made by tuberculosis to the total death-rate. In 5000 post-mortem examinations, tuberculosis caused more deaths than did any tropical disease. Fully 17 per cent. of the deaths were recognisably due to tuberculosis. The peculiar method of living of the Hindoo and his habits usually resulted in each tuberculous subject infecting a number of his relatives before he himself succumbed.

Dr. VEITCH CLARKE regretted that more stress had not been laid on the need of coördinating the results obtained from the measures available for combating the spread of tuberculosis. He did not think the importance of disinfection could be discounted in regard to this disease; any local health

authority which dissociated itself from disinfectant measures was, he considered, neglecting its duty, especially as so many tuberculous subjects were in the poorest stratum of society. The advocacy of the Grancher system did not take sufficient note of the social and domestic side of life. The diminution in the tuberculosis figures in this country was largely due to general measures such as improved housing and diet rather than to specific measures.

Dr. R. C. JEWESBURY said that the practical issue was what one ought to do when a mother, who was perhaps tuberculous, brought her infant to the clinic for advice. To separate mother and child was in most cases practically impossible. Artificial immunisation by vaccination, practised in several countries, had been practically ignored in this. Surely the B C G system of inoculation could be given a trial and the results observed. If the child could be protected from the disease at its most vulnerable age, he might be enabled to carry on to an age when he could tide over a more or less benign attack.

Dr. E. STALKIND spoke of the importance of the social and hygienic factors and of early diagnosing in pulmonary tuberculosis.

MEDICO-LEGAL SOCIETY

AT a meeting of this society held on Thursday, April 25th, Judge ERENGAY presided. Dr. EMANUEL MILLER read a paper on

The Aberrations of Adolescence

Not till the beginning of the nineteenth century, he said, was there any public conscience aroused with regard to the need for the special treatment of juvenile delinquency. The Children's Act of 1908, with the establishment of children's courts, was the essential landmark in the legal history of the subject. Realisation of the special needs of the child arose from the work of Rousseau and the philanthropic movements of the early nineteenth century, and the advances in medicine and psychology in the second half of that century. Dr. Miller's thesis was that the ignorance of disorders of conduct which had no direct legal bearing had contributed to the distorted picture of adolescent crime, wrong diagnosis, and inadequate methods of treatment. To all intents and purpose, in law, offences and charges were dealt with in the same way, whether they were committed by adults or young persons. Their main concern that evening, however, was with the wide group of disorders of adolescence; the nature of such disorders in so far as they were peculiar to a particular period of human development; the extent to which the diagnosis of physiological, psychological, and sociological causes could help medico-legal experts to interpret the law as it stands; and, lastly, the ways in which they could help to reorientate legal opinion towards a more scientific and more humane attitude to human conduct.

The problem of "growing up" was a difficult one. It entailed for its understanding a realisation that in the same way as the first five years of life were a recapitulation of the main features of racial history, so adolescence was a period of recapitulation of many of the emotional problems of the first five years. Adolescence was a period of the temporary breakdown of integration. Four processes were involved in "growing up" from infancy to maturity. First, there was the power of *inhibition*—that is, the capacity to endure an increasing amount of pain born of frustration of instincts, i.e., the power to subordinate the non-integrated impulse life to the demands of reality which were imposed upon the child by adult standards and social usages. Secondly, there was the process of *translation of ego-centricity* in the child, particularly in matters of love, to ego-centrifugal activities which characterised normal human maturity. Thirdly, there was the *sacrifice of dependency* for self-sufficiency. Fourthly, there was the *acquirement of sexual maturity*.

The coming to maturity of the instincts, particularly of the sex instinct, meant the independence of the human organism as a battling, constructive, sexual, and social creature. At puberty there was a certain discordance or lack of coördination in the growth of the various parts of the body, so that unexpected stresses and strains were placed upon certain tissues, particularly because of the sudden call of the sexual glands and the bony and muscular structures. The greatest discordance occurred as between various mental functions—instinctual, emotional, and intellectual. Instinctual functions made demands which could not be met adequately by the moral forces already established with some degree of strength in earlier years. Adolescence presented therefore a picture of instinctual, moral, and intellectual incoördination as well as of concomitant physical disorders. Autoerotism, sadistic, and masochistic manifestations occurred along with moral compulsions; idealism and family devotion with rebelliousness and revolt against authority; and sexual reserve and asceticism alongside delinquencies which were sometimes but feeble disguises of sexual frustrations. Some suicides were explicable only on understanding these mental mechanisms. Examples could be quoted of masochistic exercises ending in death, yet called suicide. Dementia præcox, not as a clinical entity but as a profound regressive phenomenon, was of first importance to the study of adolescence, and manic depression, though rarer, was also an indication of the severity of the moral conflicts of adolescence. Vagrancy, compulsive delinquency, and social stupidity were made clearer in the light of psychopathological concepts which the law could not afford to ignore. The occurrence of precocious adolescence and delayed adolescence showed how difficult it was for the law to deal adequately with young offenders only up to 17 in the children's court. Sentences should be therapeutic and not framed solely according to a legal rule. Justices should know more of the curative aspects of penology; law students should have a working knowledge of psychopathology; and probation officers should have facilities for studying a wider field of disorders than those adolescents who reached the courts. Observation centres were much needed.

Discussion

Dr. LETITIA FAIRFIELD said it was necessary to keep the age of the children's courts to 17, as it was undesirable to try young children with the developed young criminals of both sexes. Psychological treatment was only possible with full coöperation of the offender.

Dr. H. R. OSWALD said that as many offenders were mentally defective, sterilisation should be seriously considered, or alternately such offenders should be treated like lepers.

Dr. A. BALDIE said that the subject of juvenile delinquency went far beyond the confines of mental defect. Many adolescent disorders were the product of vigorous personalities who needed guidance and not segregation.

REVIEWS AND NOTICES OF BOOKS

The Cyclopedia of Medicine

By Various Contributors. Editor-in-Chief: GEORGE MORRIS PIERSOL, B.S., M.D.; Assistant Editor: EDWARD L. BORTZ, A.B., M.D. Philadelphia: F. A. Davis Company. 1934. Twelve volumes, about 1050 pages per volume. $120.

THIS comprehensive work of reference has now been completed by the publication of Vols. X., XI., and XII., and a separate index of over 400 pages. It deals with medicine and surgery and all the specialties, being written by a very large number of experts, mostly from the United States and Canada, but some from Europe and South America. The matter is arranged alphabetically, and is treated both from the practical and academic points of view. The work is ambitiously designed to meet not only the needs of the general practitioner but those of the specialist and the laboratory worker also. The editor sees the gulf between these groups as steadily narrowing with the advance of scientific medicine; it might be argued with equal force that their scope is being differentiated by the growing complexity which this advance brings in its train. Throughout the work the aim is to approach medical problems as far as possible from the bases of pathological physiology, physical chemistry, and biophysics. Some disturbances of function are considered separately—e.g., asphyxia and dyspnœa, and the production of œdema. References to the literature, sometimes very extensive, are given at the end of most of the contributions and abstracts of recent papers are often quoted in the articles. In Vol. X. are included the subjects of pregnancy, psychology, and radiology, the last occupying 400 well-illustrated pages. Vol. XI. contains among other important articles a well-written account of stomach disorders, and Vol. XII. is notable for an authoritative presentation of the subject of thromboangiitis obliterans, and a description of pulmonary tuberculosis from all aspects (except that tuberculous empyema does not appear to be adequately considered), including a lucid account of the X ray diagnosis. The good impression made by the earlier parts of the work is maintained.

It is inevitable when experts combine to write on a single or related subjects that some overlapping and some variations on the same theme are to be found, but on the whole readers will not find this a disadvantage in a work which is comprehensive and authoritative. It is proposed in the future to issue supplements to cover all important developments, and it will be interesting to see what changes are selected as worthy of record.

The Rheumatic Diseases

Practitioners' Series. By G. D. KERSLEY, M.D. Cantab., M.R.C.P. Lond., Assistant Physician at Royal United Hospital, Bath. London: William Heinemann (Medical Books) Ltd. 1934. Pp. 88. 6*s*.

THIS little book sets out in a concise straightforward fashion much useful information about the rheumatic diseases. It deals with facts and not with theories and should prove valuable to students and practitioners, although consultants will find interesting information in the chapter on physiotherapy. The opening chapters give an excellent summary of our scanty knowledge of the ætiology of the rheumatic state in children and young adults. Then follows a chapter on rheumatoid arthritis, with a particularly helpful paragraph on treatment. The chapter on fibrositis is one of the best in the book and should be of help to the practitioner in his dealings with this extremely common, painful, and disabling group of conditions. There follow sections on osteoarthritis, climacteric arthritis, spondylitis, and gout, with an excellent chapter on physiotherapy; a short account is given of the individual British spas. It must be admitted that at most medical schools the attention paid to this important group of diseases is still inadequate to the needs of those who are entering general practice, and the student would be wise to use this short text-book to supplement his teaching.

1. Ophthalmology in General Practice

By O. GAYER MORGAN. London: John Bale, Sons and Danielsson Ltd. 1935. Pp. 58. 2*s*. 6*d*.

2. Aids to Ophthalmology

Eighth edition. By N. BISHOP HARMAN, M.B. Cantab., F.R.C.S., Consulting Ophthalmic Surgeon, West London Hospital; late Ophthalmologist L.C.C. Education Department. London: Baillière, Tindall, and Cox. 1935. Pp. 242. 3*s*. 6*d*.

1. Mr. Gayer Morgan's useful, well-written, and compact little book deals with conditions frequently recurring in private practice and those less common ones in which early and accurate diagnosis is of vital importance to the eye—the ophthalmic emergencies. Of these emergencies the most important are acute glaucoma and penetrating wounds of the eye, and accordingly the methods of using the focusing lens, the loupe, and the binocular magnifier are carefully described, as well as the conditions which familiarity with these simple aids will enable the general practitioner to diagnose and to treat. For these purposes ophthalmoscopic diagnosis is not required; but modern electric ophthalmoscopes are so easy to use that every practitioner ought to be able to diagnose ordinary fundus appearances and to distinguish the normal from the abnormal. Some of the conditions which he should be able easily to recognise with the help of this book are choked disc, optic atrophy, the conditions of the retinal vessels due to arteriosclerosis when well marked, and detachment of the retina. It is, of course, essential that the practitioner should be able to recognise the first signs of ophthalmia neonatorum and apply the correct treatment. The importance of the early diagnosis of squint in young children is not so generally appreciated. Mr. Morgan's little book should serve as a standby to many who have had no time to include a serviceable knowledge of the eye in their pre- or post-graduate studies.

2. Mr. Harman has succeeded in bringing his little text-book abreast of the times while keeping it so small and cheap as to suit every pocket and purse. Comparing it with earlier editions, we notice that the chapter on eye signs in body diseases gives the student a glimpse into the wider implications of the subject, and one on the incidence and causes of blindness introduces a subject of growing importance. A new chapter on standards of vision for the Services will be found useful for reference. Mr. Harman calls attention to the hæmatologic diagnosis of sympathetic ophthalmia in cases which show an excess of large mononuclear cells, and to the treatment of such patients with salvarsan. The newer operations for detached retina are recorded, and the uses of

slit-lamp are indicated, the author's own hand model being figured. In the chapter on operations Mr. Harman's subconjunctival reefing operation for squint is fully described. The bulk of the book remains as it was, every page containing matter which the student requires to know and nothing superfluous being set down. The number of new illustrations in this edition is 38. It also includes an excellent first guide to the practice of refraction with useful practical hints on the prescribing of glasses. The only slips we have noticed are the attribution of obstruction of the central artery of the retina to embolism alone, and the repetition on p. 183 of a sentence from a previous chapter.

L'année thérapeutique, 1934

By A. RAVINA. Paris: Masson et Cie. 1935 Pp. 191. Fr.18.

Dr. Ravina continues to write these attractively produced little volumes. Like last year's annual, this one contains about 80 short accounts of new methods of treatment, based on papers published during the year, mostly in France, but sometimes elsewhere. The accounts are essentially abstracts of the papers, full enough to enable the reader to judge, approximately at least, the evidence on which advocacy of the various procedures is based. The subjects are diverse, ranging from evipan anæsthesia and the use of large doses of iron in hypochromic anæmia, to the treatment of the Vaquez-Osler disease with raw onions, and the plugging of bleeding tooth-sockets with the pectoral muscle of freshly killed pigeons. Only occasionally does Dr. Ravina permit himself a brief, and usually cautious, word of comment, and there is nothing to imply recommendation of the treatments he has chosen for description. He merely answers the question "What is new in the way of treatment?" and leaves his reader to judge what is worth while.

Quarterly Journal of Medicine

THE current issue (April, 1935) contains several papers of unusual interest. E. A. Cockayne, David Krestin, and Arnold Sorsby report fully the history of two families exhibiting the Laurence-Moon-Biedl syndrome; the text is illustrated by fundus drawings and there is an extensive bibliography given.—Hugh Ramage and J. H. Sheldon give the results of their research into hæmochromatosis. They have examined the organs and tissues post mortem of five cases of this disease in order to discover the distribution and quantities of the deposits of iron and sulphur in excess over the normal. Their figures for the sulphur content differ considerably from those of Loeper, Ravier, and Lesure. They further estimated the copper and calcium content by means of the spectroscope.—G. C. Linder has investigated the influence of infection on the action of parathyroid hormone in man; the method was to estimate the serum calcium and its response to Parathormone injections in cases of typhoid and pulmonary tuberculosis. From the results no general rule could be formulated.—Crighton Bramwell has analysed by means of graphic records the sounds and murmurs of auricular systole. He is able to demonstrate that the initial vibrations of the first heart sound are produced by the auricle and not by the ventricle, and that the auricular sound is not entirely due to a muscle tone but in part at least to vibrations set up by the blood ejected by the auricle. He has also studied gallop rhythm, reviewing the clinical findings and after-histories in a consecutive series of 62 cases in which the sign was present. He puts forward a hypothesis regarding the mechanism of production of this rhythm.—R. S. Aitken and C. Wilson have attempted to demonstrate a pressor substance in the blood in malignant hypertension, similar to the one described by Bohn. They were unable, however, to confirm Bohn's claim.—S. Levy Simpson contributes a paper on secondary pellagra in which he establishes a relationship between pellagra and adrenal hypofunction and describes the mechanism by which the condition is produced.—R. S. Handley and A. M. Nussbrecher give details of a family in which the classical symptoms of hæmophilia appear in women and review the literature of hereditary bleeding in women.

NEW INVENTIONS

APPARATUS FOR GAS ANÆSTHESIA

WHEN gas is administered for dental operations time is lost while the face-piece used for induction is being removed and a nasal tube adjusted. Our object has been to avoid this delay.

The apparatus, which can be adapted to any satisfactory gas machine, consists of two delivery tubes emerging from a head with a three-way valve. This makes it possible to deliver the anæsthetic gases to the mouth only, to the mouth and nose simultaneously, or to the nose only. The mouth delivery tube ends in a metal inhaler of special design which allows easy access to the nostrils when it is in place. The nose delivery tube ends in an attachment

to accommodate either a standard nasal inhaler or a nasopharyngeal tube. Anæsthesia is induced by administering the gases through the mouth with the valve turned to "mouth only." A mouth-prop is inserted, the patient is asked to breathe easily through the mouth, and any nasal breathing is checked by gently compressing the nostrils. After induction anæsthesia can be maintained while the pharyngeal catheter is passed through the nostril or nostrils and secured in place. The gases are then passed through nose and mouth simultaneously for a moment while anæsthesia is steadied. The valve is turned to "nose only," the mouth inhaler is dropped, and the mouth is packed with gauze in preparation for the operation.

The advantages claimed are: (1) the nasopharyngeal tube can be passed without undue haste; (2) resort to ether, or ethyl chloride, is unnecessary; (3) simpler nasal tubes, such as Boyle's tubular nose-piece (two curved metal tubes for insertion into the nostrils), can be used; (4) the mouth inhaler materially assists in obtaining induction if the ordinary type of nasal inhaler is used; and (5) the wide-bore supply tube to the mouth inhaler allows of rapid induction without the feeling of suffocation or discomfort associated with small-bore tubing.

The apparatus has been made by Messrs. Charles King Ltd., Devonshire-street, London.

H. PARRY PRICE, M.R.C.S. Eng.,
G. H. ELLINGHAM, L.D.S. Birm.

Reading.

THE LANCET
LONDON: SATURDAY, MAY 4, 1935

THE peace which has prevailed in our constitutional affairs during the rule of His Majesty GEORGE V. has been unbroken, and his claim on the affections of his subjects, always amply proven, receives next week a full demonstration. While other principalities and powers have gone down, to disappear or rise again in altered shapes, the KING governs a united Empire and every national activity must have benefited, and must be benefiting, from the justice and stability of his reign. When the calling of medicine is in question such a period as 25 years presents a problem in retrospection. The period is a considerable one, long enough to leave deep imprints upon the path of progress, but not long enough to make any surmise certain as to what details of the progress will be found later of permanent value. It so happens that the span of professional life of both the physician and the surgeon to HIS MAJESTY'S Household coincides broadly with that of his reign. The retrospects which follow from their pens supply unanswerable reasons for a belief that our medicine will maintain, and enhance in virtue, what of fundamental good lies in the efforts of the past 25 years, while subjecting all developments in our science to a scrutiny which until recent years has been undreamt of. Dr. RYLE, physician to Guy's Hospital, and Mr. WALTON, surgeon to the London Hospital, from different angles, testify to a spirit of scientific union in the ranks of medicine which must promote the consolidation of all that we would have kept, while forming the firm foundation for the rise of greater things in the future. The fusion of ideals and of interests among those in charge of the health of the country has become a very real thing, and the creation of that fusion is the conspicuous characteristic of medicine during the past 25 years. The profession of medicine, when joining all ranks and classes in loyal congratulation to KING GEORGE and QUEEN MARY upon the jubilee of their reign, can point with honourable satisfaction to real advances made under their administration, and to a vast vista of promise.

MEDICINE 1910—1935

BY JOHN A. RYLE, M.D., F.R.C.P.
PHYSICIAN TO HIS MAJESTY'S HOUSEHOLD

I

To have lived the more active part of one's life within the first 25 years of the present Georgian era, observing and sharing, in however humble a degree, its manifold changes and reactions, confers on review a deep sense of privilege. For medicine it has been an eventful era. The medical sciences, in concert with other sciences, have registered a proud succession of discoveries, while medical practice has been both enriched and embarrassed by the rapidity of progress and accumulations of new method.

Beside me as I write I have the 1910 edition of "Osler's Medicine" and a modern text-book. The first remains a classic and a rich mine of clinical information, but, lacking wide tracts and chapters embodied in the second, which relate especially to developments in the diagnostic fields of radiology and biochemistry, it has become inadequate. In 1910 I was a clinical clerk in the wards in which I now teach. The reports which we handed to our teachers then were rarely weighted with the sheaves of documents from chemist, bacteriologist, hæmatologist, radiologist, and clinical specialist which my own clerks now assemble. I am grateful to have lived and to have been taught in that easier period by men trained in the tradition of the physician-pathologists for which my school is famous, and I still believe, as they and Osler believed, that the bedside, the out-patient department, the dead-house, and the practice which comes later must continue to provide the chief foundations of our medical art. The problems of man in disease will always require for their solution processes additional to strict scientific assessment. I commiserate the present generation of students on the score of the size and complexity of their curriculum and the difficulties which they must experience in combining and applying their departmental knowledge. I envy them, on the other hand, for their superior endowments in chemical understanding and for the inspirations of the times in which they live. Between them they have already witnessed the introduction of insulin and liver therapy; the much more effective handling of the secondary anæmias; the more certain and earlier recognition and control of many disease-processes with the aid of blood chemistry; the more intelligent applications of psychology, supplanting the electricity, bromide, and valerian of an earlier day; and many advances due to better medico-chirurgical coöperation.

It would also, I believe, be fair to say that the relationships between teacher and student have become more free and friendly. Instruction is less didactic and authoritative and open discussion is more commonly encouraged. Rapid increments of knowledge, for all the help which they have given, have however made new difficulties by increasing the number of possibilities and inquiries to be reviewed in the problematic case. Certainty and completeness in diagnosis appear less easy of attainment than they did when precise checks and controls were lacking. On the whole there is more humility both among teachers and students. In therapeutics conflicting views, especially where there are medical and surgical alternatives, com-

plicate judgment, while the multiplicity of theories and remedies which infiltrate the mind by way of individual teaching, the journals, and the advertisements of the proprietary chemists are a constant embarrassment.

The growing habit of intensive specialisation has been good for the special subjects and has brought benefits to countless patients, but for the time being its influence upon medical thought and practice as a whole and upon undergraduate teaching has not been altogether good. Inevitably it has encouraged men to ignore that close interdependence of part and whole and environment to which the biologists and the philosophers have become increasingly attentive in recent times.

II

It is impossible to estimate our indebtedness where diagnosis is concerned to modern radiology, endoscopic methods, and biochemistry, or to the many therapeutic improvements in the fields of special surgery, pharmacology, and dietetics which the past quarter of a century has brought. We are, however, an impatient profession and liable to queer crazes and misapplications of our science. I do not wish to overstress the abuses which have followed new knowledge and technical advantage, but be it remembered that within the era under review, and especially its post-war phase, we have witnessed the misapplication of bacteriology in a riot of ill-considered vaccine therapy; the arrival and, let us hope, the departure of unhealthy experiments in amateur psychiatry and analysis; and the rise and fall of a crude mechanistic surgical epoch leading to excessive operating especially in the abdominal field. It is, however, remarkable and gratifying that within this same brief era we are already observing the return to sanity and balance. We are testing our new tools and using them to fuller and fuller advantage. We are more frequently allowing science to correct our art, and more rarely permitting our art to bring discredit on our science.

It becomes daily more apparent, however, that something more than a revised curriculum will shortly be needed to set our professional house in order. The standards of general medicine must be improved even if it requires such educational changes as the postponement of the more specialised studies until after qualification, or the addition of a few months spent in apprenticeship to experienced general practitioners before qualification. Better facilities are needed for obtaining qualified hospital appointments both before and in conjunction with practice. To balance the inevitable and necessary multiplication of specialists we require, as a leaven, a larger proportion of well-trained general physicians and a higher average of culture and attainment in the coming generations of students destined for general practice. The public has been partly to blame for present dissatisfactions by reason of its own over-insistence on specialist advice; credulous ever and avid of the newer mode it is not aware that the maladies and problems of our forbears were commonly far better handled by general practitioners of the old humane, if less scientific, school than they are to-day by multiple tests and X rayings and visits to a succession of consultants. Important innovations in municipal and State medicine have added to the difficulties of practice by a gradual withdrawal of much work, with its attendant experience, which formerly belonged to the family doctor.

III

The last 25 years of medicine may conveniently be divided into three periods, 1910–1914, 1914–1918, and 1918–1935. In the first period teaching was predominantly broad and clinical, soundly backed by morbid anatomy and histology and the valuable additions to diagnosis which bacteriology had supplied. The Wassermann reaction had recently arrived and the arsenical treatment of syphilis had been discovered. Laboratory medicine and diagnostic radiology, as we now employ them, were in their infancy. There had been no big changes in the medical systems of the country apart from those due to the Insurance Act, which brought both advantages and disadvantages in its train.

In the second period those who were so situated as to gain their war experience in hospitals and clearing-stations received what was in fact a new medical education. The treatment of wounds and fractures, intensively studied on a vast scale, was improved beyond belief. The pathology of wound infection and the treatment of chest and head wounds received combined study at the hands of surgeons, physicians, radiologists, and pathologists with the happiest results. The protective uses of typhoid inoculation and of the early administration of tetanus antitoxin were proved and justified to the hilt. Blood-grouping and transfusion came into their own. Tropical diseases, the effects of gassing, and "new" diseases such as trench fever, trench nephritis, and spirochætal jaundice were subjected to intimate investigation by team-work of a highly productive kind. At home the study of the "soldier's heart" gave a new impetus to cardiology, and the study of the war neuroses laid the foundations of much that is good in medical psychology in this country to-day.

Where all else was destructive it is something to remember and be proud of that the medical services did not fail in any part of the reparative work allotted them and that, simultaneously with the performance of arduous humane and military duties, they advanced knowledge by patient observation and research and added important chapters to British medicine.

One of the most effective developments of war-time medicine was what came to be known as team-work. Unhampered by any considerations of career or livelihood, and stirred alike by the spirit of the times and enthusiasm for their patients and their subject, the members of medical, surgical, and mixed teams at work on the various fronts applied themselves unanimously to their tasks in a manner which seldom seems possible in civilian

medicine to-day. An historic example of the benefits of applied "team-work" was provided by the King's illness, in all the details of the investigation and conduct of which reminders were forthcoming of the combined medical and surgical treatment of chest wounds with pathological controls which took place in the clearing-stations and base hospitals in France.

In the medical schools and special hospitals it is difficult, where it might seem easiest, to secure this intimate and happy coöperation. The claims of teaching and practice and other routine and problems of administration all militate against full success. The Medical Units, which have brought new motives into teaching and have given facilities for full-time workers, have other concerns and are not, as units, sufficiently representative or full time. An approach to the system has been attempted in certain private clinics whence valuable publications are occasionally forthcoming, but still the spirit and achievements are not comparable and the field of opportunity is too confined. If ever there were an opportunity to recapture the team-work spirit under suitable conditions this should, to my thinking, be found in the newly organised hospitals of the London County Council and the larger municipalities. Whole-time workers, relief from the necessity of practice and teaching, and unlimited material, with facilities for segregation of groups of cases, are the main essentials. In closely collaborative team-work is to be found the best answer to the artificial separations of medicine, surgery, and the ancillary sciences.

Of the post-war period I have already written partly in praise, partly in criticism. Medical philosophy has not prospered commensurately with medical science and technique. During the awkward years of reconstruction between 1918 and 1935 misdirections of thought and energy inevitably occurred, but they are already being remedied, and British medicine, as compared with the medicine of other countries, has maintained its general high level and has recorded significant gains. The yearly reports of the Medical Research Council make important reading. Neurology, psychiatry, cardiology, and pædiatrics have registered steady progress. "Clinical science" has been launched. There is scarcely a branch in which advances have not been made. Even in the difficult cancer problem new ground has been consolidated. The incidence of preventable diseases continues to fall. The toll of human life and suffering in acute and chronic diseases formerly beyond efficient aid has steadily diminished.

The year of the King's Jubilee, which has provided a fitting occasion for review, may well mark the initiation of a further phase of eager effort and fruition, affecting alike the science, the art, and the teaching of medicine throughout these islands and the dominions over seas.

SURGERY 1910—1935

By A. James Walton, M.S., F.R.C.S.

SURGEON TO HIS MAJESTY'S HOUSEHOLD

I

When a man's opinions become fixed his progressive work is finished. Vanity, which increases with age, shows a constant desire to prove that views expressed long ago are still correct. Only as long as a man is prepared to admit that his previous conclusions have been shown by the light of more recent knowledge to be incorrect is his mind young, active, and receptive. No surgeon therefore can ever feel that his knowledge is complete, for ever he must keep abreast of new knowledge and must be analysing his own results and comparing them with those of others. He must be altering his views and his treatment in accordance with these observations. It is often stated that surgery has now reached its limits and affords but little chance for progress, that treatment and investigation have become standardised and almost beyond discussion. If those who are depressed by such views would realise that even to-day there is hardly a single statement in surgery which can be made without fear of contradiction they would again take heart and feel that they also have a good opportunity of adding to the common stock of surgical knowledge. Perhaps nothing offers greater encouragement than to look back over a period of years and to observe the changes that have occurred during that time. Some of them may not be regarded by all as moves in the right direction and many of the older methods that have gone may be regretted, but there can be no doubt that more has been gained than lost for the common good.

The present time of His Majesty's Jubilee is a fitting one to look back and observe what progress if any has taken place during His Majesty's reign. Such a review reveals the fact that the changes have been very extensive, as they have been in every branch of civilisation. The whole period has been one of flux. As H. G. Wells makes one of his characters say, "This here progress, it keeps on. You'd hardly think it could keep on." It is so interesting a period in the history of the human race that even the most weary and jaded of us could almost hope for great prolongation of life to see in what direction we are moving. Much of the present may be depressing and unpleasant but there is also much to make us believe that we are not rushing to destruction and dissolution but are ultimately reaching to a higher and brighter life. In surgery this certainly seems to be the case and many lives that were doomed to a rapid termination or to years of misery are now saved, and their owners have been given years of comfort and happiness.

II

It is in the atmosphere and life of a large hospital that the changes are most in evidence, and that which would, perhaps, be most noticeable to one who has not visited his hospital for 25 years is the status and attitude of the surgeon not only to his patients but to his colleagues, medical officers, and students. In the first years of this century surgeons were regarded with awe and almost with reverence. They were individualists, ruling their own departments with an almost regal authority. Their knowledge was omniscient and their views infallible. On their arrival they were met in state, and in state they progressed round the wards. Their teaching was a combination of dogma and sarcasm concerning the views of others. They laid down the law with great authority but produced little proof of their statements. Their opinions were never questioned and to admit an error was considered as evidence of lack of knowledge. As a result they often came to believe in their own infallibility. They rarely met their colleagues, of whom they were often bitterly jealous, and although treating them with formal courtesy in their company were only too willing to belittle their work in the presence of students. They regarded all workers in the few laboratories that then existed as their servants. Theirs were the patients and all who worked among the patients were under the surgeon and his was the credit of their work. With such an attitude there was a grave risk that all work by others should be neglected and that when the surgeon retired his knowledge of surgery might be but little altered from that which he held on the day of his appointment.

III

Gradually and almost imperceptibly this has all changed. The individual surgeon is treated with much less awe and his work is subject to the keenest criticism, both during his clinical teaching and in the medical press. He is expected to produce proof of all statements in his writings and he must be prepared to be questioned on his remarks by any audience. His operating theatres are open to medical men from all parts of the world and while operating he must be ready to answer all questions on his technique and to state why he adopts one form of operation in preference to others. It is the presence of this critical environment which perhaps above all else compels a surgeon to keep up to date and to study his own results in comparison with those of other surgeons. On the other hand, his colleagues on the clinical staff, in the laboratories, and in the special departments, and his assistants in the wards are all his personal friends. He treats his colleagues with very little formal courtesy, but he knows that he can rely on their help even in the slightest difficulty. The cases are not jealously guarded as the personal property of the individual surgeon, but opinions are freely invited and patients are often transferred to the surgeon who has the widest experience and the greatest interest in that disease. And he no longer feels that it is derogatory to admit that others know more on one subject than himself; the advice of the most junior colleague is as eagerly sought as that of the senior. It is still to-day the greatest compliment to be asked advice by one's colleagues, but it is also the greatest satisfaction to seek it from others. Not only are the laboratories freely at the disposal of any surgeon wishing to work in them, but the greatest help and advice is willingly given by the heads of these departments. Young men working under a surgeon have every opportunity of making use of his clinical material and are encouraged in every way to carry out research work and to publish it under their own names. The surgeon realises that he can learn more and obtain more encouragement from the keenness and enthusiasm of younger men than from any other source. The present-day surgeon may have lost much of the old formality, but what he has lost in formality he has gained in friendship. He is no longer an individual worker for his own advancement, but a member of a large team working for the common good. This growth of team-work is becoming more and more necessary in private as well as in hospital work, and surgeons are finding it essential, especially in the larger operations, not only to operate in the same theatre but to employ the same anæsthetist, assistant, and theatre sister. The greatest admiration must be expressed for the older surgeons who worked with no skilled aid and with no conveniences, but the best results can only be obtained in the modern extensive operations with the help of a skilled and highly trained team.

IV

In the ordinary practice of surgery much advance has been made. Certain diseases which had a more or less hopeless outlook are now successfully treated and the patients' lives are saved. Tumours of the pituitary gland were rarely operated upon. Nothing was known of the surgical cure of hyperparathyroidism. Hyperthyroidism was only rarely treated by operation, and not only was the mortality very high but the value of operation was disputed by many. I once heard a famous physician state that it was as sensible to operate upon a thyroid for Graves's disease as to remove a kidney for diabetes. Splenectomy was rarely performed, and gastrectomy and colectomy for carcinoma were in their infancy. Perhaps however the greatest changes are those seen in the nature of the hospital population. Before 1905 the wards were filled with patients suffering from large ulcers of the neck due to tuberculous glands which had been opened and scraped. Excisions and amputations for tuberculous joints and bones were to be found on the operating list nearly every day. To-day such cases have almost disappeared and the majority of students pass through their whole career without seeing a case of operation for tuberculous glands or joints. Acute appendicitis was with us then as it is now, but the mortality with acute cases was nearly 80 per cent. The use of surgical gloves had only just been introduced and suppuration or even fatal sepsis was not uncommon after

clean operations. But although we hear so much to-day of the marvels of modern surgery, there can be no doubt that the greatest progress has been made in what is the real aim of medicine, namely, preventive medicine. Not only has surgical tuberculosis greatly diminished, but typhoid fever which was so common before 1910 is now rarely seen in hospital. In the summer months of that period 40–50 children a day were sent away from a hospital to die, being already moribund with epidemic diarrhœa and vomiting. To-day these cases are rarities. Such great advances have been made owing to control of food, water, and sanitation that one can be certain that the disappearance of other diseases will follow in their wake. In days to come surgeons will look back with astonishment at the modern operations for appendicitis, for gastric and duodenal ulcers, and for carcinoma, and when the cause of the hyperactivity is known and prevented it will seem inconceivable that the enlarged thyroid of Graves's disease was ever removed by surgery. Medicine will ultimately progress so that surgery reaches its true aim, that of its own abolition. Already surgeons have ceased to be mere technicians and are physicians in their own specialty, and it would seem that one day the cleavage between medicine and surgery will cease and men will become specialists covering every branch in their own subject.

V

The progress of medical education is as great but is less well-defined and probably in a few years will undergo considerable further change. On all sides this subject is bristling with difficulties and is exercising the minds of teachers. Unfortunately in many respects the most satisfactory treatment of the patient is conflicts with the best teaching of the undergraduate student. Throughout medicine and surgery the introduction of more detailed methods of investigation and the increase of technical skill in treatment have led to the wide growth in specialism, so that more and more departments are established which the already overworked student has to attend. An undergraduate working for a pass degree requires to know *when* to operate and not *how* to operate, and yet a great deal of his time has to be taken up attending and assisting at prolonged and complicated operations which he ought never to be called upon to perform in general practice. Probably in a short time this part of his work will be delegated to post-graduates specialising in surgery. The enormous growth in clinical laboratories has led to much more reliable and intensive investigations of a biochemical and pathological nature and to-day has become essential for the investigation of most diseases; but it has removed from the student and the resident medical officer the feeling of responsibility which was so useful in his teaching and in his training of self-reliance. It has also added to his difficulties in that special classes have to be arranged for his training in clinical pathology. With the appointment of officers of higher training as skilled assistants his opportunity of carrying out minor operations has been lessened, so that post-graduate appointments have become increasingly important until they are now essential. It is difficult however to see how this can be avoided. Increased knowledge necessitates increased training.

Although there is therefore still much in surgery that is unstable and is bound to change, the many improvements that have occurred in the last 25 years show great progress. Surgery is international, and team-work has replaced individualism. Every man has increased powers of learning from those in his own country and abroad, powers which have been enormously enhanced by the growth of travelling, surgical clubs, and of medical societies, where all branches meet for free discussion, so that even the humblest worker who has no opportunity for research may throw a side-light on a subject which may lead to most valuable results. Every student who enters surgery to-day may feel that although his income may be less than in the past he will be able to make a living and will have that which will give greater happiness in life than financial profit—interesting and joyful work. And that he has, more than ever before, opportunities of making new discoveries and adding to the general progress of medicine.

ANNOTATIONS

THE PRACTICE OF PSYCHOTHERAPY

A LEADING article in our issue of March 16th, dealing with the difficulties surrounding the practice of psychotherapy, has called forth in our correspondence columns the expression of varied opinions, scarcely any of which seem to have escaped challenge. This state of affairs, at first sight depressingly suggestive of some inherent difficulty in the subject itself, resolves itself, on close examination, into the stimulating discovery that the subject is being approached by different people, not merely from different angles, but from different ends, whilst the absence of controversy about methods of treatment should be noted as marking an important advance. The modern psychiatrist, who by his change of title indicates a wider field of effort than the older alienist, seeks to take into that field the treatment of those disabling mental disorders which do not typically lead to the need for institutional care and are more accessible to psychological treatment than are the major psychoses. Approaching the subject from this end, and familiar with cases where delicate diagnosis may be necessary to avoid attempts at treating unsuitable patients, the psychiatrist regards experience in the major psychoses as an important element in the preparation for psychotherapeutic work. Hence we find one correspondent demanding the diploma in psychological medicine as a minimal requirement for those handling mental patients; and it must be admitted that the diploma, or a doctorate in mental diseases, is the only hall-mark available for the would-be psychotherapist. The requirement is, however, vigorously contested by

a correspondent who declares that medical psychology is as fundamental to medicine as is physical examination, and sees no reason why any practitioner who has the time and inclination for the work should not practise psychotherapy. Here we note the approach to the subject at the end remote from psychiatry, and as a practical example of this approach may be cited an article by Dr. James L. Halliday on Psychoneuroses as a Cause of Incapacity among Insured Persons.[1] Dr. Halliday, whilst acknowledging his debt to psychiatric writings, used the methods of ordinary clinical medicine in demonstrating that over 30 per cent. of incapacity in insured persons was caused by psychoneurotic illness, most of it masquerading under other diagnoses. Though he did not touch on actual psychotherapy, he pointed out the need for an "integrator," a rôle to be played by "a general practitioner who will have been trained to recognise the elementary reactions of a person to the difficulties, including the happening of an organic disease, which must be encountered by everyone who passes through the ever-challenging environment of being alive." The context indicates that Dr. Halliday hopes for a reorientation of the medical curriculum which will enable the practitioner to fill this rôle.

These alternative avenues of approach explain the conflict referred to by one writer, rightly or wrongly, as "the silent contempt that now obtains between the institutional and the non-institutional psychiatrist." We must note at this point that the conflict expresses itself, as such conflicts often do, in a matter of nomenclature. The word *psychiatrist* may be, and often is, taken to mean a person engaged in asylum work as his chief interest; some non-institutional psychiatrists would repudiate the title, whilst asylum workers might deny their right to it. The word *psychotherapist* carries with it no claim to special acquaintance with asylum work and the two titles serve to indicate the roads by which their respective bearers have come near enough to be aware of their differences. There are psychotherapists who, beginning with the psychoneurotic as he is found in general practice and obtaining their training as best they can, whether by personal analysis or otherwise, gain—perhaps by their own mistakes—a knowledge of early psychotic cases at a stage before they reach asylums. If they are wise such practitioners will know when to seek the aid of the experienced psychiatrist; nor can it be denied that a short experience of asylum work would be helpful to them. On the other hand, the asylum worker who turns to the treatment of psychoneurotics will have much to learn from his non-institutional colleagues. Coöperation between those who have approached this important subject from different beginnings should be made easier, we hope, by the ventilation of their views in our columns.

ALVEOLAR VENTS IN THE LUNG

ANATOMISTS are still divided over the histology of the terminal portions of the respiratory passages. A. C. Macklin, who formerly upheld the view that the mammalian airways end blindly, has now recanted[2] in favour of those who describe minute pores, stomata, fenestræ, or (as he prefers to term them) vents, connecting adjacent alveolar sacs. Thick sections appear to be necessary for satisfactory histological demonstration of these vents, which vary in number and size in different species of mammals, their width ranging from that of a red blood corpuscle (or even less) to half that of an alveolar wall. He has demonstrated them in the lungs of human beings aged from 29 months to 80 years; apparently, therefore, they are not pathological in origin, although an emphysematous ætiology has been ascribed to them in some quarters, and their formation certainly resembles the changes of emphysema in that they must be formed by breaking-down of septa between adjacent alveolar spaces. Not only has Macklin converted himself to the histological proof of the existence of these vents, but he describes experiments which leave no doubt that there is free peripheral communication between lobules of the lung. Possibly the object of this communication is to equalise alveolar air pressure in adjoining lung territories, and where air-tubes are occluded it may help to prevent lobular atelectasis by allowing air to reach alveoli whose supply is otherwise cut off. It seems likely, too, that the vents act as safety-valves to prevent harmful over-distension of alveoli adjoining a territory threatened with collapse. In such circumstances they would doubtless widen so as to allow freer escape of air into the under-distended region; indeed, Macklin thinks that as a rule the smaller air vents are actually closed and do not open unless the alveolus is over-full. On the debit side is the possibility that they enable infected material (e.g., tuberculous) to spread from lobule to lobule—the process being encouraged by excessive distension of the alveoli and consequent enlargement of the vents spread from alveolus to alveolus through the pores.

SUPPLEMENTS TO THE DIET OF CHILDREN

IN an investigation reported by T. W. Simpson and Eric C. Wood[1] forty-eight children attending welfare centres were successively treated, according to a controlled experimental scheme, with cod-liver oil, halibut-liver oil and milk, and Virol, in doses of equal calorific value. Each child was under observation for twenty-four weeks—six weeks on its ordinary home diet and six weeks on the ordinary diet plus each of the supplements in turn. The growth-rate was measured by weekly weighings. Six weeks may be thought hardly long enough for the determination of the benefits, or lack of benefits, derived from the supplements, but Simpson and Wood state that preliminary experiments showed that four weeks' treatment was sufficient to produce an appreciable variation in weight, and in the main experiment distinct differences appear. The mean increase in weight per child for the six weeks' treatment was 1·84 oz. on the unsupplemented diet, 5·98 oz. with the addition of cod-liver oil (two teaspoonfuls daily), 6·94 oz. with the addition of halibut-liver oil (six drops daily) plus half an ounce of dried milk, and 15·88 oz. with the addition of virol (three teaspoonfuls daily). Taken as a whole, the results clearly suggest that benefit was derived from the supplements, but inspection of the figures subdivided by sex and period of treatment shows that the differences in results with the different diets are far from uniform; possibly, however, this is due to the small number of children involved. With the diet containing halibut-liver oil the investigators found significantly greater individual variations in growth than with that containing cod-liver oil, and they conclude that the accepted dose of halibut-liver oil contained too much vitamin A for some children and should not

[1] Brit. Med. Jour., March 9th and 16th, 1935, Suppl. pp. 85 and 99.
[2] Jour. of Anat., January, 1935, p. 188.

[1] Med. Officer, March 30th and April 6th, 1935, pp. 125 and 135.

be regarded as suitable until a test has been made on the individual concerned. The supplement they advise consists of balanced calories and mineral salts, with a smaller amount of vitamins than is commonly recommended nowadays. During the experiment eight children contracted measles, four on the basal diet and four on the diets containing supplements; it is suggested that these figures may be a sign that resistance to infection was conferred by the supplements. The data, however, are too few to bear this out, while the high incidence of measles on children of all social classes when exposed to risk does not support the idea that resistance is readily increased by extra feeding. Broadly, this carefully planned experiment indicates that the basic diet of the children involved was little more than sufficient to meet their maintenance requirements, so that the additional 74 calories provided daily—though small compared with the total calorie intake—was of importance for growth. If the experimental and administrative difficulties are not insuperable it would be useful to have similar data from larger numbers of children kept on the different diets for rather longer periods.

MALIGNANT TUMOURS OF BONE

THE ultimate results of radical excision for osteogenic sarcoma of an adolescent bone make a sad tale, and even when surgery is backed up by vigorous pre-operative irradiation of the primary site and post-operative deep X ray therapy of the lungs, the number alive at the end of five years is tragically small. The obvious remedy—which amounts to a pressing necessity—is earlier diagnosis, for which Mr. Harry Platt, in his Lady Jones lecture,[1] makes a strong appeal, based on the solid fact that pain is almost invariably experienced before a tumour is appreciable, and although intermittent at first becomes severe and continuous as the tension in the periosteum increases. As three-quarters of these growths are in the neighbourhood of the knee, persistent pain in this region in a healthy adolescent or young adult calls for careful clinical and radiological investigation, with the possibility strongly in view that its cause may be a primary osteogenic sarcoma. Unfortunately at the stage when these growths offer a fair prospect of permanent cure their radiological appearance is far from pathognomonic and their diagnosis likely to present a clinical problem of such difficulty that the advisability of biopsy has to be considered. Mr. Platt, while opposed to the indiscriminate performance of biopsy—it should, he thinks, be used as a last resort and with great precaution—has found it a valuable aid in the diagnosis of early tumours in which the clinical and radiological findings are atypical. He advocates removal of the material under a tourniquet and its examination by a pathologist "continuously engaged in the study of the bone tumour problem," for he regards as a waste of time the occasional submission of material to a pathologist who is sceptical of the value of the method. The discovery of pulmonary metastases whilst the primary tumour is still quite small is happily very rare. Mr. Platt pays tribute to the success which has followed the mass attack on primary bone sarcoma in the United States of America.[2] The latest report of the American "bone sarcoma registry" contains records of 74 five-year cures of osteogenic sarcoma in a total of 504 registered cases. Early diagnosis and prompt surgical measures probably take the predominant share in producing these very encouraging figures, but an analysis of the figures suggests that Coley's fluid must be regarded as a potent agent. The results justify an experimental inquiry into the retarding action which these bacterial toxins exert on sarcomata. The results of irradiation alone in the treatment of bone sarcomata are disappointing. Mr. Platt gives a concise account of Ewing's tumour of bone, but does not refer to the work of Oberling,[3] who has made a good case for regarding these tumours as of reticulo-endothelial origin. In describing the secondary malignant tumours of bone, he points out that when a malignant adenoma of the thyroid or a hypernephroma of the kidney has been found associated with a solitary bony metastasis, both primary and secondary growths have occasionally been successfully excised.

[1] Delivered at the University of Liverpool on Feb. 21st, 1935, and published in the *Liverpool Medico-Chirurgical Journal*.

[2] American College of Surgeons: Twenty-second Year Book. Chicago. 1935.

PROF. BRERETON BAKER

THE death last Saturday of Herbert Brereton Baker at his home at Gerrards Cross will leave a gap in many friendships. In the chair of chemistry at the Imperial College for 20 years he moulded the approach of innumerable science students to chemical problems, and no student escaped without the impress of his teaching, for Baker was a disciplinarian of the first order. He had had experience of less serious teaching material as science master at Dulwich College and headmaster of Alleyn's School, the lower school of the College, before he came to South Kensington. But just as much a part of his life was the urge to investigate the properties of gases, a research begun in his early days as assistant to H. B. Dixon at Oxford, and broken only during the war when he was called on to counter the unexpected and terrible dangers of gas attack. There is a current story, probably apocryphal, that he was unwilling to part to anyone with the secret of an ineffably fatal gas of his own. After the war Baker returned again with great content to the extraordinary discovery he had made earlier with Dixon that gases like hydrogen and oxygen can scarcely be induced to combine without the presence of traces of moisture; the interval had indeed served him in good stead, for it allowed some of his gaseous mixtures to undergo a year-long desiccation and to reach a state aptly known at South Kensington as "Bakerian dryness." At home he had the relaxation of profound absorption in fishing and other country pursuits, and the abiding joy of a wife who shared with him the interests of his scientific work.

VACCINATION AGAINST TYPHUS

THE March *Bulletin* of the International Office of Public Health contains two interesting communications on different methods of vaccination against typhus exanthematicus fever which is prevalent in certain parts of North Africa. The first paper, which was communicated by Dr. Gaud, the delegate for Morocco, deals with the method originated by Dr. Georges Blanc, director of the Institut Pasteur of Morocco, and described by him in communications to the Académie de Médecine on Oct. 31st, 1933, and May 1st, 1934. In these Blanc had shown that the virus of murine typhus isolated from Casablanca rats immunised guinea-pigs not only against murine typhus, but also against classical typhus. As the result of further experiments he found that murine typhus virus, which from the first is only feebly

[3] Oberling, C., and Raileanu, C.: Bull. de l'assoc. pour l'étude du cancer, 1932, xxi., 333.

pathogenic for man, can be rendered absolutely non-pathogenic by the addition of bile. The present communication relates the results of an investigation carried out by Blanc in conjunction with Gaud on 723 inmates of a penitentiary, aged from 16 to 60, 309 of whom were injected intramuscularly with 1 c.cm. of the vaccine in a dilution of 1 in 1000 and 414 with 2 c.cm. of the same vaccine in a dilution of 1 in 500. A febrile reaction lasting 4–9 days occurred in 1·6 per cent. of the first group and in 4 per cent. of the second. Revaccination of 75 persons with 1 c.cm. of a dilution of 1 in 1000 three weeks after the first inoculation was followed by no reaction. Tests were then made on five revaccinated persons, and it was found that whereas control subjects inoculated with murine typhus reacted in the same way as control guinea-pigs, the inoculated individuals showed no reaction at all; thus indicating that they were absolutely immune. The future will show the duration of the immunity conferred by this method. In the meantime Gaud regards it as at once practical, harmless, and efficacious. The second communication, which was made by Dr. Mohammed Shahin Pasha, the Egyptian delegate, gives a brief account of the uses of Weigl's method of antityphus vaccination which was carried out on 183 persons in an Egyptian village where typhus had been rife during the last two years. Three injections were given and in some cases were followed by a mild reaction. Only one of those inoculated subsequently contracted typhus. The village will be kept under observation for some time in order to determine the duration of the immunity conferred by the vaccine.

GRAPHIC RECORDS

PICTORIAL representation of the progress and results of experimental investigations in pathology has long been recognised as a convenient and time-saving method of keeping records. Those familiar with the Scientific Reports issued from time to time by the Imperial Cancer Research Fund will recall the black silhouettes showing alterations in size and shape of induced neoplasms, the wedges which are used to indicate progressive growth, and the symbol of death (†) which, incidentally, is the accepted formula introducing obituary notices in many foreign journals. An effective example of the graphic method of representation as applied to records of human disease is supplied by the group of surgeons attached to St. Thomas's Hospital who combine in a contribution to our Prognosis series this week (see p. 1059). The method was instituted some years ago by Sir Cuthbert Wallace as an easy way of keeping follow-up records and of enabling after-results to be seen at a glance; by its use statistics of a large number of consecutive cases of various surgical conditions are being accumulated in accessible form. The 149 consecutive cases of carcinoma of the stomach which form the basis of the present article are divided into inoperable and operable cases, and the length of history, type of intervention, and subsequent duration of life are graphically recorded by a skilful combination of lines and dots. The original charts, reduced in size for reproduction, are made on squared paper with 12 divisions to the inch, so that on the convenient scale of an inch to a year records can be kept in months. It might be objected that such a pictorial record is necessarily incomplete. For example, the fact that the subjects of carcinoma of the stomach on whom it was possible to perform a partial gastrectomy lived nearly four times as long, on the average, as those with inoperable growth means little without the supplementary information, supplied in the text, that their discomfort was also greatly lessened. But the need for additional notes is implicit in any graphic representation which is not overweighted by so many signs and symbols as to lose its simplicity. Nearly everyone carries away a more deep and lasting impression from the contemplation of a picture than from study of a table of figures, and authors who believe that the statistics they have collected carry a cogent message are well advised to present them in diagrammatic form.

DEATH AND THE DOCTOR

DURING 1934 the *Journal* of the American Medical Association published the obituaries of 3231 physicians of the United States, and in its issue of April 6th these notices are subjected to a cold and impersonal statistical analysis. The average age at death was found to be 64·3 years, a figure that compares closely (as far as calculation is possible) with the age that can be computed for English medical practitioners from the Registrar-General's 1921–23 report on occupational mortality. In the States heart disease was the leading cause of death, followed, in order, by cerebral hæmorrhage, pneumonia, and cancer. Deaths from violence—accidents, suicides, and homicides—appear high, amounting to nearly 7 per cent. of the total, but no standard of comparison with other occupations is given and alone the figures are not very informative. A relatively high rate from violence would certainly be in accordance with the 1921–23 experience of England and Wales, for the Registrar-General's report shows an accident-rate more than double that of the other occupations of social Class I., and a suicide-rate double that of all occupied and retired males—though this latter high rate is shared by other occupations of social Class I. Taken as a whole, however, the mortality of medical practitioners in this country does not differ from the general average appreciably at any time of life. Acute non-tuberculous respiratory diseases, influenza, and pneumonia seem to be a special risk, but the phthisis mortality is low. The English and American figures appear generally to be in accordance though no close statistical comparison is possible. Considering the obvious facilities for adequate and systematic treatment, it is somewhat interesting to observe eleven American physicians recorded as dying of pernicious anæmia. This is a case in which the physician might well be expected to heal himself; perhaps the explanation lies in the certification and tabulation of death in which he could hardly be expected to assist.

ENGLISH PRISONS IN 1933

WHILE the health of our prison population continues to reflect great credit upon our medical officers of prisons, the latest annual report of the Commissioners of Prisons, dealing with the year 1933 (Cmd. 4872. 1*s.* 6*d.*), indicates that improvements in our administration of justice are still possible. The Medical Commissioner has repeatedly complained of the way in which courts of summary jurisdiction deal with mentally affected prisoners. There has been an unhappy tendency for magistrates to sentence to imprisonment a man whom they believe to be mentally defective or insane. Sometimes too they have asked the prison authorities to keep a man under observation during sentence so that the court may be informed of his mental condition prior to release. This information seems to be asked for with a view to dealing with the prisoner on some future reappearance by which time it may be valueless and misleading. In any event the practice is

improper, since prison officers are not authorised to submit reports on the state of mind of convicted persons to anybody but the prison authorities. A third point is that medical officers, when asked to report on an accused person's mental condition, are not given such full material as to the facts and the medical history as they are entitled to have. The Home Office apparently drew the attention of magisterial courts to these three points during 1934. It is disquieting to find that cases still occur where offenders are convicted and sent to prison in spite of the fact that medical reports are before the magistrates which state that the men are certifiable under the Lunacy or Mental Deficiency Acts. There is no legal power at present to compel a defendant, when remanded on bail, to attend and undergo medical examination at a clinic or elsewhere in order that his state of mind may be examined. This gap in the law seems worth filling.

As regards women prisoners, the medical officer of Holloway Prison comments on the reception of a fresh type of prisoner—namely, girls under 21, sentenced to 7 or 14 days' imprisonment, who have been suffering from syphilis and gonorrhœa. He describes them as of low mentality, and observes that the shortness of the sentence gives no time to treat their physical, or investigate their mental, condition. They receive treatment while in prison but they return to the streets of some seaport town in an infectious state. The medical officer boldly suggests that, in spite of legal ideas of the liberty of the subject, the magistrates should be empowered to pass a sentence of such length as will give a reasonable chance that the woman's disease will be controlled if not cured—and this will mean many months.

The Medical Commissioner acknowledges the help of the civil hospitals where 156 prisoners and Borstal inmates were temporarily treated during 1933. A few abscond, of course, and the civil hospitals naturally are not enthusiastic about admitting convicts to a general ward; some prisoners, too, feign illness or produce conditions which require operative treatment in order to obtain the greater comfort of a civil hospital. For these reasons, he says, arrangements are being made for an operation theatre in a prison in the London area. Major operations are carried out in five provincial prisons with great advantage.

Since the last report was issued a medical psychologist has been attached for duty at Wormwood Scrubs. The present report warns us not to expect any early conclusions as to the value of psychotherapy in delinquent cases. The medical officer at Maidstone Prison has made a few attempts at psychotherapeutic treatment, but he records that in only a few cases was real coöperation obtained. He adds a cheerful story of one prisoner who wanted his dreams analysed. At the first interview it was found that what the man really wanted was a softer mattress, because a hard bed made him dream so much. The interviews were, by mutual agreement, discontinued.

WAR IN THE CHACO

THE war between Bolivia and Paraguay has been fought in (and over) a country that is barely habitable. Descriptions such as Duguid's "Green Hell" some years ago familiarised many of us with its uninviting characteristics, and from Dr. J. W. Lindsay we now have a report [1] which brings out the unusual nature of the medical problems that have arisen there. Dr. Lindsay has long been honorary medical officer to the Protestant Missions in Paraguay, and he tells us that the efficient medical services of the country sufficed in peace-time to cope with incipient outbreaks of disease; in fact, the fundamental disadvantages of the area are extremes of drought and damp rather than endemic infections. But the throwing of large masses of men into a roadless and often waterless country broke down the sanitary arrangements for the first six months of the war, and severe outbreaks of enteric, ankylostomiasis, malaria, and vitamin-deficiency diseases followed. The enteric was found to be due to a paratyphoid bacillus, *Salmonella paratyphus* Chaco, and has been largely controlled by a specific vaccine; hookworm anæmia has been dealt with by the issue of boots; the malaria was very benign, and a dry season has greatly reduced its incidence; while improved transport, allowing of proper rations, particularly of the yerba maté, has controlled the avitaminosis. Of maté, which has recently been shown to be rich in vitamins A and B and whose virtues have long been preached by travellers returning from South America, Dr. Lindsay states that it "makes the most wonderfully stimulating and sustaining army ration ever produced." The Bolivian prisoners were always found with a ration of coca leaves, and it is suggested that their lack of fighting spirit was due as much to the coca as to the character of the country which was so strange to them. The immense distances have made the transport difficulties colossal. At one time the Bolivian capital was 1535 miles from the front, of which about 1000 miles had to be on foot. The Paraguayans had 300 miles by steamer from Asunçion, then 100 miles of light railway, and 600 miles of marching. Bullock carts were at first the only means of transport for the wounded, but now improved roads and motor lorries are available, while air transport is used for serious cases, a journey formerly taking 2–3 weeks by bullock cart taking 2–3 hours by air. When Dr. Lindsay wrote, conditions had settled down, and a good bill of health was reported both in the Army and in Paraguay as a whole. Foreign medical officers, with the exception of Major Arthur Weiss, the Russian director of the Paraguayan Army Prophylaxis Corps, have now "faded out," and Paraguayan medical officers take service with the Army for six-monthly periods, continuing their civil practice in the intervals.

One enemy which the Paraguayans have quite failed to conquer is the flies. "In the hospitals flies were all over the dead and dying. In the field one would see half a dozen heaps of black, and they were found to be dead bodies buried in flies."

OF HEALTH RESORTS

LAST week saw the opening of new baths at Woodhall Spa and of a new clinic for the treatment of rheumatism at Buxton. Details of the latter function are given this week in connexion with a report of the simultaneous meeting at Buxton of the British Health Resorts Association. The proceedings at both spas were similar in respect of the things that were said at the meetings, the unanimous opinion being expressed that the spa and the health resort were now proving themselves essential to any national scheme for the promotion of physical well-being. At Buxton the suggestion was made that centres for health and recreation at suitable places, whether inland or on the coast, should be established not necessarily directed only to the treatment of particular diseases or to the reception of various classes of patients, but prepared to receive a general public seeking what they could offer. The

[1] Trans. Roy. Soc. Trop. Med. and Hygiene, 1935, xxvii., 539.

idea has much force. Our younger population, especially the urban among them, to-day gain improved physical health and pleasant change of environment by hiking in company, and a scheme that would provide these gay and sensible bands with centres at which meetings among themselves could be held has much to commend it, for the modern tramps by force of numbers and coöperation would obtain the necessary amenities. And they would thus supply a practical argument for the brightening of the social life at our existing spas. At the Buxton meeting this came in for comments of a severe character; and though the speakers framed their criticisms with a spirit of levity, in their joking they were very serious. What Sir Landon Ronald said of the artistic appreciation displayed by spa authorities with regard to music was completely scathing although so urbane, while Mr. St. John Ervine described their dramatic taste in terms of devastating drollery. They succeeded in convincing their audience that spa authorities would have to consider the position, for though the dullness of the British health resort has met with frequent denunciation, it has never before been so cruelly and aptly expressed. It seems clear that the time-honoured plea of the rigour and caprice of the British climate will not suffice as an answer to those who ask that some mental food and relaxation should be offered to spa patients, and especially to their accompanying friends, who outnumber them. At all our health resorts the accommodation has vastly improved and is still improving, while the medical science displayed at them is now of a high order and the practical adjuncts to treatment, often very costly, are supplied in immediate response to medical requisition. The patient is placed in the most pleasing surroundings possible and his medical care is sound and scientifically applied. It is administered by physicians and surgeons who not only have the special skill and experience necessary, but who are stimulated by real enthusiasm for practice along their special line. These are great things; they are indeed the greatest things; but the fact remains that the social life of the spa is grey. Better music and better dramatic entertainment during the seasonal periods would work a real change.

DISTRESS AND HEALTH

LAST December Dr. G. F. Walker wrote a letter to the *Times* declaring that in the district where he works, "between the Tyne and the Tees," there is a substantial and progressive deterioration in public health. This deterioration, he said, is taking place despite "resolute, competent, and generous local efforts," and he wanted to combat the tendency towards complacency in national feeling about the distressed areas. His general conclusion so far conflicted with the opinions expressed in Sir George Newman's annual reports that the Ministry of Health immediately instructed Dr. James Pearse, Dr. J. Alison Glover, and Mr. F. W. Grant to investigate the state of affairs thus represented. The results of their inquiry in Sunderland and its neighbourhood [1] give no grounds for the complacency which Dr. Walker deplores, but neither do they justify his belief in a serious and progressive decline. The investigators think that he "has been misled by his professional contact with the sick into drawing conclusions which he applies generally to a wide population, and that he has limned a medical picture in unduly dark lines to correspond with the economic background of a depressed area." If his object was to emphasise that the burden of combating disease is more than this area can bear, this object may have been legitimate; but they regard the medical basis of his arguments as unsound. In particular, Dr. Walker maintained that children and young adults are nowadays more prone to infections and catarrh; that anæmia of malnutrition is increasing; that conditions in the district make chorea and rheumatism endemic; that neurotic maladies are distressingly common; that rickets is highly prevalent; and that conditions of bodily dilapidation are causing a startling increase of metabolic diseases such as diabetes and pernicious anæmia; while "thousands and thousands of poor people in this area labour under disabilities such as pyorrhœa, deafness, gastritis, sciatica, bronchitis and sinusitis." Dr. Pearse and Dr. Glover, however, find that the general death-rate, the infant mortality-rate, the death-rate from bronchitis and pneumonia, and the case-mortality of scarlet fever and diphtheria do not indicate unfavourable effects from the present economic conditions. Tuberculous infection is still much in evidence, but except in the age-group 15–24 (which tends to be disturbing throughout the country) there is no sign that the long-continued unemployment has done more than retard the rate of improvement. Clinical examination has shown minor manifestations of rickets in 4·5 per cent. of young children seen at welfare centres, but the disease has much diminished in prevalence, and gross rickets is rare; "no other deficiency diseases have appeared." Clinical examination of persons in various categories suggests that about three-quarters have a good standard of health, the condition of adolescent youths being the least satisfactory. There is some prevalence of anæmia but it does not seem to be rapidly increasing; there is little reason to think that catarrh is commoner; and though there may be more neurotic maladies, Dr. Pearse and his colleagues are impressed rather with the courage with which difficulties are faced. The slightly higher incidence of acute rheumatism and chorea in the area is probably associated epidemiologically with the recent prevalence of scarlet fever, and is general in the county. Of the minor disabilities mentioned by Dr. Walker, pyorrhœa is notably common, and also perhaps gastritis; but there is no sign of increase in diabetes or pernicious anæmia. Though Dr. Walker's views are supported by some members of the medical profession in Sunderland and the adjacent districts (one of their letters is quoted at length), his colleagues on the whole disagree with what he says—except perhaps about the degradation in temperament of young men. Practitioners of wide experience have said that conditions are better than formerly owing to the operation of the public health services, and readers of this illuminating report must be thankful for the existence of these antidotes to some of the poisons attacking our social system.

[1] Report of an Inquiry into Effects of Existing Economic Circumstances on the Health of the Community in the County Borough of Sunderland and certain districts of County Durham. London: H.M. Stationery Office. 1935. Cmd. 4886. Pp. 52. 9d.

THE governors of St. Bartholomew's Hospital have accepted a tender for the erection of a block of buildings to provide accommodation for 250 medical beds. Building operations will begin at once, and the work is to be completed in a year and a half. The new medical block will be known as King George V. Building. It is hoped that the private Bill now before Parliament will enable some of the accommodation to be used for the benefit of middle-class persons.

PROGNOSIS

A Series of Signed Articles contributed by invitation

I.—PROGNOSIS OF CARCINOMA OF THE STOMACH

THIS article is based on 149 consecutive cases of carcinoma of the stomach admitted to St. Thomas's Hospital under one firm during the 13 years, 1920–1932, under the care of one or other of us.

The few cases operated on during this period for chronic ulcer, in which microscopy suggested small areas of so-called malignant change, are not included in this series. Prognosis in such cases has been found by us to be invariably good, as contrasted with primary and undoubted carcinoma; we do not believe that such cases are, in fact, malignant.

The accompanying charts are self-explanatory. This particular method of recording a graphic representation was instituted by one of us (C. S. W.) as affording an easy method of keeping the "follow-up" records up to date, and of enabling the after-results to be seen at a glance.

In the two charts each horizontal line represents one case; the dark vertical line the date of operation, or of admission if no operation was performed; to the left and right of this line are shown the duration of the history and duration of life after operation respectively, each large division representing a year and each small division three months.

The total of 149 cases has been divided into two groups; the inoperable, in which excision was not possible, are shown in Chart I, and the operable, in which a partial gastrectomy was performed, in Chart II.

INOPERABLE CASES

The 122 *inoperable* cases are shown in Chart I. Of these, 1 was untraced; only 9 lived for a year or more after operation, but 1 lived for 3 years and 1 month. Excluding the case not traced, the average duration of life of the remaining 121 cases works out at 3·3 *months*. If the 17 patients who died within one month (all of these were operated on) are excluded, the average duration of life of the remaining 104 cases works out at 4·0 *months*.

It may be noted in passing that these 104 cases were made up of (*a*) 70 patients upon whom a short-circuiting operation, or one enabling food to be taken, was performed—that is to say, gastrojejunostomy 56 cases, gastrostomy 13 cases, jejunostomy 1 case; and (*b*) 34 patients upon whom either a laparotomy only was performed—26 in all, or no operation was performed—8 in all. The expectation of life in the former group of 70 cases was 6 months, and although a gastrojejunostomy relieved pyloric stenosis as such, it did nothing to relieve the gastritis which is associated with carcinoma of the stomach, and is a principal agent producing symptoms. Attempts to relieve gastritis by therapeutic measures proved extremely disappointing.

OPERABLE CASES

The 27 *operable* cases are shown in Chart II. One lived for 6 years and 3 months (carcinoma proved microscopically). The average duration of life works out at 12·3 *months*—i.e., nearly four times as long as the average in the inoperable group. If the 9 patients who died within one month of the operation are excluded, the average duration of the remaining 18 cases works out at 18·5 *months*. Assuming that all deaths occurring within one month of the operation are due directly, or indirectly, to the operation, the

CHART I

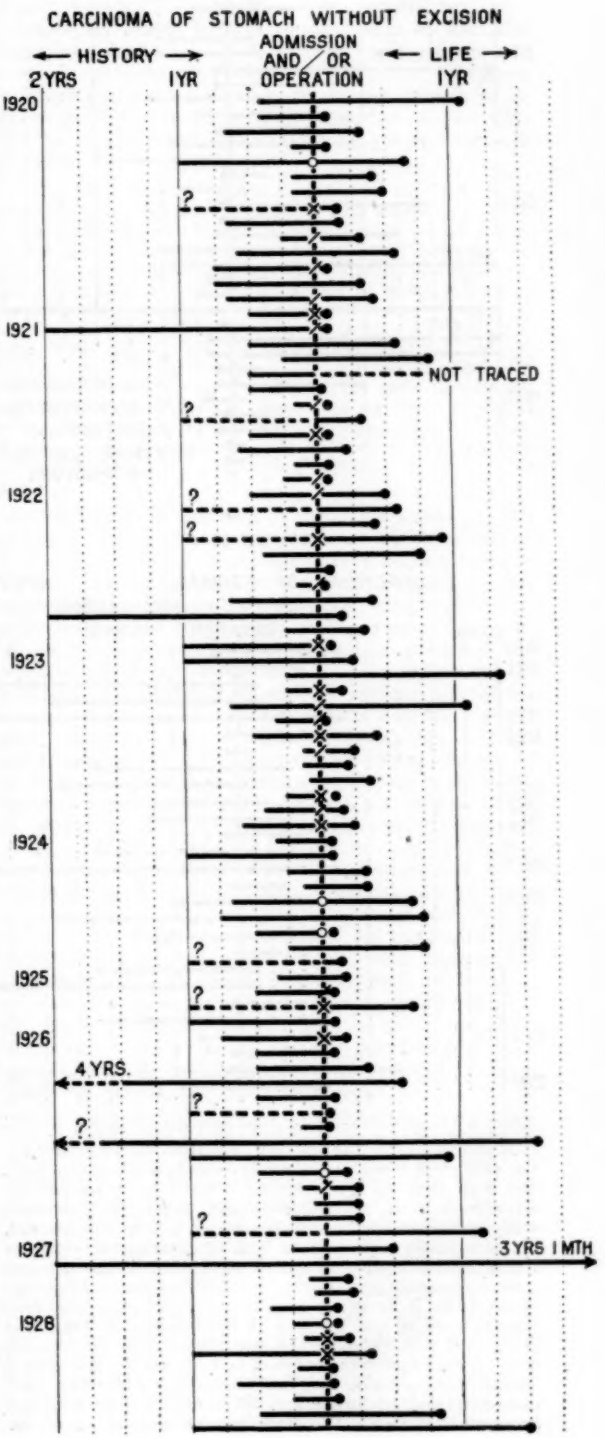
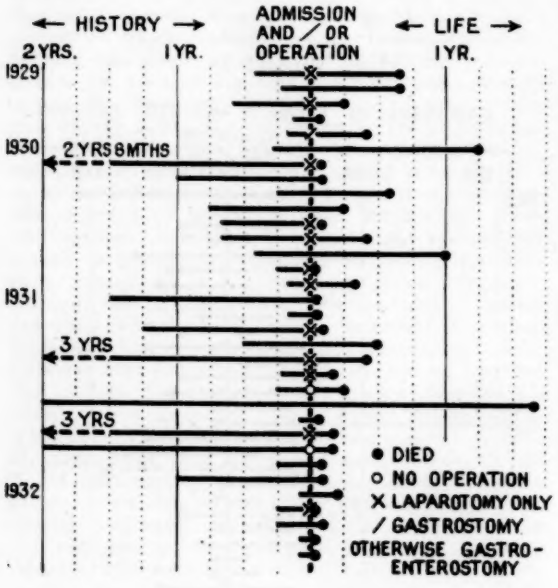


CHART I

(*continued*)



operative mortality works out at 33·3 per cent. The causes of these 9 deaths were as follows: shock 2, peritonitis 1, duodenal fistula and peritonitis 1, pulmonary thrombosis 1, broncho-pneumonia 2, exhaustion and cardiac failure 2.

Although not quite within the scope of this paper, it is of interest to note that the average length of history in the inoperable group (excluding 9 cases, duration unknown) was 7·1 months (Chart I), while that in the operable group (excluding 1 case, duration unknown) was 5·5 months (Chart II). The short history in almost all these cases of carcinoma of the stomach contrasts with the long history in almost all cases of chronic ulcer, and is a strong argument against the view that carcinoma commonly starts in a chronic ulcer.

While it is generally recognised that the results after partial gastrectomy for carcinoma of the stomach are bad, and those after some palliative operation are worse, the mere statistical data do not give a picture of the relief of suffering obtained by the radical operation, for from personal observation there is no doubt that the remaining months of life are far less distressing for a patient who has had a partial gastrectomy than for one who has not.

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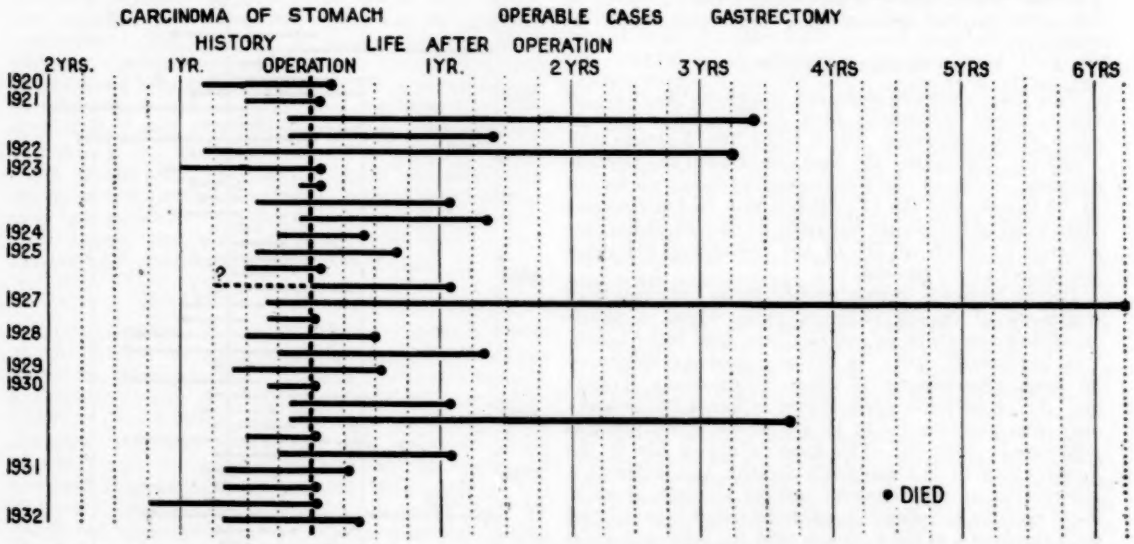
B. C. MAYBURY, M.B., F.R.C.S.,
Surgeon to the Hospital.
R. H. O. B. ROBINSON, M.B., F.R.C.S.,
B. W. WILLIAMS, M.B., F.R.C.S.,
R. H. BOGGON, M.S., F.R.C.S.,
Surgeons to Out-patients to the Hospital.

CHART II



BRITISH ASSOCIATION OF RADIOLOGISTS.—During the past year a new radiological society, bearing this title, has been formed. The objects of the association are the advancement of medical radiology in all its branches, with particular reference to its clinical, ethical, educational, and economic aspects. An annual meeting or congress will be held at a selected centre, at which members from all over the country may meet and obtain first-hand knowledge of work as it is going on in other centres. The first annual meeting will be held at Birmingham in June this year, and will extend over two days. The programme will follow the precedent of such occasions and will include a presidential address, hospital visits, and exhibition and demonstration of radiograms of various conditions, and an annual dinner. The date of the meeting and the details of the programme will be announced shortly. The Association has been formed with an initial membership of about one hundred, and Dr. James F. Brailsford is the first president. Membership is limited to registered medical practitioners who have been engaged solely in the practice of radiology, or radiology and therapeutics, for at least five years. Those who have been in practice for a shorter period are eligible as associate members until they qualify as full members. Elections to the Association will be made at the annual general meeting on the nomination of the council, and those elected will be entitled to attend the subsequent functions of the congress. Proposal forms for membership may be obtained from the Hon. Secretary, Dr. S. C. Shanks, 68, Harley-street, London, W.1.

SPECIAL ARTICLES

THE BRITISH HEALTH RESORTS ASSOCIATION: THE NEW BUXTON CLINIC

A NEW clinic at Buxton for the treatment of rheumatic diseases was declared open on Friday, April 26th, by Lord Horder. Members of the British Health Resorts Association held at the same time a conference at Buxton. The Duke of Devonshire presided over the opening ceremony and briefly indicated the long interest of his family in the Buxton spa, adding personal testimony to the benefits received from the Buxton treatment.

Lord Horder said that he would be deliberately brief as the company were to inspect the new clinic at the close of the talking. The particular duty before them to-day was to see the new clinic for rheumatic diseases by which valuable and appropriate treatment could be provided for those whose social status made them ineligible as charges of voluntary hospitals. Of the Royal Devonshire Hospital at Buxton he said that it was actually the oldest institution in the country which had devoted research to rheumatic disorders, and now, with the establishment of the new clinic, efforts were being made to advance pathological investigations, assisted by the most modern equipment. He spoke warmly of the team-work done by Buxton doctors; as clinicians and orthopædists, pathologists, biochemists, and physicists their services were available, and he proclaimed his personal enthusiasm about the future of the clinic. Alluding to the modest prices which would be charged, he said that as an advocate of the paying beds system he had always held that there should be facilities afforded to the patient of moderate means. That this would be so at the Buxton clinic gave special pleasure to his duty in declaring the institution open.

The clinic was then open for inspection. It is situated at one end of the famous Buxton crescent, receives 100 patients, and contains every convenience of a modern hospital—careful lighting, central heating, and ample hot and cold water-supply in the separate rooms. The general accommodation includes a reception-room, lounges for men and women, and consulting-rooms for doctors. There is provision for the developing of X ray photographs, while arrangements have been made with the authorities of the Royal Devonshire Hospital for the services of their bacteriological and biochemical departments. The clinic is in direct proximity to the baths which can be reached under cover, the patients virtually residing in the same building. These, with their range of swimming pools through which water continually flows at its natural temperature of 82°, are admirably designed, and the arrangements for packs and colloidal heat baths, for colon lavage, and for manipulative douching, where the massage of the patient is undertaken under thermal water, are complete.

In the evening the Mayor of Buxton, Councillor W. R. Sanders, J.P., presided over a dinner at St. Anne's Hotel, when the corporation welcomed their guests. After the loyal toasts the Duke of Devonshire proposed Lord Horder's health saying that Lord Horder had been a good friend to Buxton already and was giving further proof of his regard for the spa by opening the new clinic that afternoon. Anything, said the Duke, that would relieve the human race of the scourges of gout and rheumatism was welcome to-day, and he concluded by making some pertinent remarks on the amenities of spa life, referring to that "greatest nuisance of the post-Victorian era; the noise of the motor-car." Lord Horder, in reply, gave some humorous details of the charges that were wont to be paid at the Buxton spa some 400 years ago, when the weekly rates for visitors had been fixed as follows: dukes, £3 10*s*., that being exactly the charge for the cheapest bed in the new clinic; earls, 10*s*.; doctors, 10*s*.; gentlemen, 3*s*.; yeomen, 1*s*. Lord Horder thought that as half the money paid went to the doctors they got a good rebate on the charges. He quoted a letter addressed to the director of the baths by Queen Elizabeth as showing that Her Majesty possessed a pretty wit. The Earl of Leicester was undergoing a treatment and the Queen wrote as follows:—

"We think it meet for the saving of our credit to prescribe unto you a proportion of diet which in no case you shall exceed, and that is to allow him (Lord Leicester) by the day of his meat two ounces of flesh, referring the quality to yourselves so as you do not exceed the quantity, and for drink one-twentieth of a pint of wine to comfort his stomach and as much of St. Anne's sacred water as he lusteth to drink. On Festival days, as is fit for a man of his quality, we can be content you shall enlarge his diet by allowing him for his dinner the shoulder of a wren, and for his supper a leg of the same beside his ordinary ounces. The like proportion we mean you shall allow unto our brother of Warwick, saying that we think it meet in respect that his body is more replete than his brother's, that the wren's leg allowed at supper be abated."

He concluded by speaking of the value to the patient provided by the ideal surroundings of Buxton, the pure tonic air and beneficial effects of the thermal waters, an environment admirably supplemented by the up-to-date methods of treatment which now prevailed under the careful and accurate diagnosis of the spa doctors. Sir Squire Sprigge proposed the toast of prosperity to the B.H.R. Association, whose function he said was to collect information about the health resorts to be made available for doctors and their patients. While allowing the natural advantages to be derived in certain circumstances at many well-known continental spas, he said that to seek medical assistance abroad led to a lamentable break in treatment and both this break and the expense could often be avoided if the patient and the doctor knew that treatment similarly appropriate could often be obtained in the British Isles whose varieties of climate and physical geography were so remarkable. The toast was responded to by Dr. W. G. Willoughby, M.O.H., Eastbourne, who called the attention of the company to the diffusion of accurate information in the guide-book of the Association edited by Dr. Fortescue Fox, which now dealt faithfully with the claims made by various centres. The Association, he said, should be duly grateful to the publicity which the press now gave to its efforts, and of the secretary of the Association, Dr. Alfred Cox, he said that he was indefatigable and imperturbable. Dr. Kaye le Fleming, proposing the toast of prosperity to Buxton, said that the town and spa were representing the keenness of the day for the promotion of physical culture. He considered this a very live question, and asked if he was looking too far ahead when he visualised the establishment of health resorts which would cater for a large section of the public—health resorts which would provide something more than treatment for the sick, but baths, gymnasia, and playing grounds for the well. The toast was replied to by the Mayor of Buxton, who pointed out that Buxton possessed many of the necessary amenities, such as beautiful gardens and

wonderful air. Their aims until now had been to meet the needs of patients mainly suffering from rheumatic disorders sent to it by the medical profession, but other developments might follow. He said that his council considered the B.H.R. Association as a most valuable friend and he had always recommended that it should obtain financial support. Alderman J. E. Pugh proposed the health of the guests, which was replied to by Prof. F. R. Fraser and Dr. Slocomb, of the Mayo Clinic, Rochester, U.S.A. Prosperity to the new clinic was next proposed by Prof. Arthur Hall, who regarded it as representing concrete evidence of the enormous development of medicine. The treatment of rheumatic patients at the lower end of the social scale had only been possible in big voluntary hospitals and at the other end of the scale sick millionaires got their chance; now at Buxton the sick middle classes had an opportunity. The toast was replied to by Mr. W. F. Wrigley, chairman of the Buxton clinic directors, who said that as usual the promoters of the clinic had been let down by their financial expert whose estimate of the cost had been just 100 per cent. wrong. However, the situation had to be faced and he appealed to the many representatives of music, the drama, art, and journalism present, as well as to his fellow townsmen of Buxton, to give the clinic full support.

Conference of the B.H.R. Association

On Saturday the work commenced with an inspection of the thermal and natural baths under the guidance of local medical men, after which a conference took place in the Hippodrome. Lieut.-Colonel W. Byam, chairman of the medical advisory committee of the B.H.R. Association presided, and began by thanking the Mayor for the hospitality of the borough. He pointed out that the Association was not purely and directly medical, though it existed for health purposes. It held that health centres should be instituted throughout the country, and properly planned. In those that existed reforms should be made, accommodation at hotels should be varied, transport should be made safe and unnecessary noise abated. Besides proper provision of medical care for the patient and suitable amenities, there should be means of entertainment not only for the patients but for the friends who accompany them. He looked forward to the establishment of a diploma for those duly equipped in physiotherapeutics, hydrology, and climatology, and official recognition of a practical sort for approved health resorts. He called upon Sir Landon Ronald, principal of the Guildhall School of Music, to open a discussion upon

THE PLACE OF AMUSEMENT IN THE HEALTH RESORT

"What can be done," asked Sir Landon, "and what should be done to make our own beautiful watering places more attractive?" And he followed by referring to the depressing influence of many post-war restrictions.

"But," he said, "my job in life is music, and I have only referred to these grievances because they play an important part in the problem of what sort of entertainment should be provided at the seaside. A couple of years or so ago I visited several of our most popular resorts during the summer holidays for the purpose of finding out firstly what sort of music was provided for the people; secondly, what sort of bands or orchestras they were asked to listen to; and, thirdly, what sort of performances were given. I must admit to you that I came away a sadder but wiser man. In several cases I found the programmes beneath contempt; I found that the so-called 'orchestra' seldom consisted of more than from six to fifteen instrumentalists; and, lastly, I found that the performances were obviously under-rehearsed and generally ragged and rough. Let me hasten to add that the blame for this was not to be attached either to the conductor (who generally led the band by playing the violin) or to the instrumentalists. The cause of it all was the short-sighted policy of false economy pursued by those who governed the town. Music is still looked upon by many town councillors as one of the most expensive of all objectionable noises."

Sir Landon went on to comment on the absence of any enjoyment in or knowledge of music to be found among civic corporations, making a conspicuous exception in favour of Bournemouth where the corporation had provided a good permanent orchestra under Sir Dan Godfrey, no doubt at much expense, but the residents were convinced that the money was well spent on a magnificent advertisement of the town. His reminiscences of the fine orchestras that existed at different centres in England 30 or 40 years ago were sad, but to the question whether he had any remedy to offer he would reply that there were great London orchestras which had no concert engagements during the summer months, and that these might be engaged say for three weeks at a time to play in large seaside places. Entertainment managers, he said, underrated the public intelligence in thinking that they are as satisfied with half a dozen instrumentalists playing fox-trots as they would be with the London Symphony Orchestra playing beautiful light music—for there was no suggestion that only high-brow compositions should be given; and when the expense was spoken of he would refer to the enormous sums spent by some of these places in promenade and building schemes.

"In suggesting," he concluded, "that one of the great London orchestras should visit these seaside places during July, August, and September, I only do so on the understanding that no such first-class orchestra already exists in the town. I have no wish to disturb the existing local orchestra; they could play for the remaining nine months of the year. But at all events the corporation should see that visitors have the best music that can be obtained for the period when their towns are crowded with visitors and holiday-makers—all spending a great deal of money. And the engaging of a London orchestra would not enter into the scheme of things at all, if the corporation had vision and understanding enough to keep in constant employment a proper small symphony orchestra all the year round; while it must be borne in mind that any local orchestra would deserve a couple of months' holiday annually, and that the residents would enthusiastically welcome a change of orchestra and a change of conductor. My remarks, in which I have constantly alluded to seaside resorts, apply equally to our spas. The story of music in the spas is not a happy one. Some spas which at one time had a good orchestra have fallen from grace. And in none of them is there anything comparable to the fine music that one can hear at several of the continental spas. If our British spas intend seriously to compete in attractiveness with their continental rivals, one or more of them should make a real attempt to show that British spas with British orchestras can equal them in this, as they can do in many other ways."

Mr. St. John Ervine followed with an amusing diatribe on the appreciation manifested by health resort populations, the residents, the visitors, and their friends of good drama. He once brought the Irish players, when at the zenith of their fame, to Buxton, and the kind of audience they got wanted to make him cruel to cripples. He thought that a health resort should not only provide good entertainments but that the inhabitants, especially the municipal authorities, should cultivate cheeriness, and he drew a fantastic picture of councillors in their robes and of lovely aldermen. But the serious message of his address was that a borough in providing amenities

for visitors, sick or sound, should include among them the presentation of good drama.

Mr. L. du Garde Peach pleaded the right of young people to be amused when on holiday, and Alderman Harvey, Lord Mayor of Stoke, emphasised this opinion, adding that a large proportion of the population resented the perpetual presentation to them of films that were trashy and entertainments that were vulgar.

Mr. Bonnington, publicity manager, showed that his was a difficult task in dealing with many conflicting interests.

Modern Orthopædics

In the afternoon demonstrations were given of orthopædic methods employed at the Devonshire Hospital, when an interesting series of patients was seen undergoing various forms of manipulative treatment. A plaster bed for spondylitis was made in the presence of the company and the rapidity with which the process could be carried out by expert nurses was remarkable. Methods of taking and recording spinal tracings were shown, the treatment of knees after extension on the Balkan frame, and the different exercises accompanied with splinting to restore comfort, function, and appearance to crippled hands. Dr. L. S. Potter, Dr. L. C. Hill, Dr. C. W. Buckley, Dr. J. A. Hendry, and Dr. J. S. Charlton showed cases under treatment of Paget's disease, von Recklinghausen's disease, early spondylitis, and extreme osteoporosis in rheumatoid arthritis, and all these demonstrations left the firm impression that careful, advanced, and well-directed surgical and medical measures were being taken to counteract conditions and sequelæ in very painful and obstinate diseases.

CRIPPLED CHILDREN

A discussion followed upon the spa treatment of crippling diseases, especially in children. Dr. Buckley presided, and Dr. R. G. Gordon, physician at the Children's Hospital, Bath, opened the discussion. He said :—

"In rheumatic infections of childhood, which come under the general grouping of acute rheumatism, there is seldom if ever any lasting effect in the absence of secondary infection, and the term 'rheumatic' must not be held to be an inevitable indication for hydrotherapy, for in the acute and subacute stages of this infection hydrotherapy in my submission is contra-indicated. Still's disease does not differ from rheumatoid arthritis except that the reactions such as splenic and marked glandular enlargement are what may be regarded as characteristic of the *age* of the patient rather than of the nature of the disease process. In all cases of rheumatoid arthritis at any age in the acute and subacute stages, hydrotherapy of any kind must be used with the greatest care and circumspection, and the orthopædic maintenance of posture and general resistance of the patient are the features which require greatest attention. Acute and subacute fibrositis are now and then met with in children and young adults, and sometimes provoke difficulties in diagnosis with tuberculosis of the spine, especially in those cases of the latter disease of very insidious origin. In such cases of fibrositis hydrotherapy and its adjuvant therapeutic measures have a decided place, provided great care is taken that on any signs of retrogression in the condition of the patient a fresh search is made for tuberculous infection.

"In the orthopædic disorders of children external hydrotherapy has a wide field of usefulness, but I propose to confine myself to the hot pool bath and the consideration of certain physiological effects of this treatment. It is not always recognised that an artificial hyperpyrexia can easily be induced by a hot bath. Acting on the suggestion that hyperpyrexia induced by intravenous administration of T.A.B. was beneficial in chorea, I induced hyperpyrexia in some dozen cases by means of hot baths. There was a rise of temperature to 104° while in the bath at 108°, and the maintenance of a temperature for 2½ hours before it fell to normal. But while benefit was definite it was not maintained any better than with other methods of treatment, and in two cases excitement and violence almost amounting to mania was induced. But except for mild vomiting on two occasions I met with no signs of heat collapse. Immersion in the hot bath results in the hyperventilation of the lungs in an attempt to cool the body. The result of this is to produce a deficiency of carbon dioxide both in the arterial and venous blood and a consequent alkalosis amounting to a 0·09 rise in pH value. There is a transference of water to the blood from the tissues with a relative diminution of hæmoglobin. The purpose of this dilution is to fill the much dilated superficial vessels. Later there may be a concentration of blood due to the loss of water by sweat and urine. With the transference of the water from tissues to the blood there is also a transference of protein and salts, so that the serum becomes richer in these. It would appear that this increase of serum solids is derived from the muscles. Hot baths increase the sugar metabolism and therefore lower the blood-sugar by 9·45 per cent. on the average. The inorganic phosphorus content of the serum is increased by about 4·25 per cent., while the total serum calcium falls to the extent of 3·03 per cent. This latter alteration will result in an increased neuromuscular hyperexcitability as a consequence of hot baths which may in rare cases amount to an epileptiform convulsion or tetany. The type of bath which I prefer for the treatment of orthopædic disorders of childhood is the large pool bath as used at Buxton. We use these baths at Bath more particularly for anterior poliomyelitis in its later stages; neuritis and chronic arthritis; congenital dislocation of the hip; coxa plana, after the head is reasonably firm in the acetabulum and regeneration is well advanced; all types of spastic paralysis. The advantages claimed for the pool bath at temperatures varying between 95–104° are improvement of circulation; relaxation of spasm of the joints so that contractures, whether due to spasticity or even to fibrosis, may be stretched passively or actively; and relief of pain, so that manipulations can be carried out with a minimum of distress. The use of water overcomes the load of gravity at least to the extent of 95 per cent., as proved by Dr. Crowden's experiments."

Dr. Gordon concluded by reminding his hearers that while hydrotherapy is a potent weapon capable of inducing great benefits, it may inflict great harm, as there is scarcely any mechanism of the body which is not affected by it, and crippled children cannot be treated by rule of thumb.

The discussion was continued by Dr. A. H. Douthwaite, assistant physician, Guy's Hospital, and physician in charge of the massage department.

CRIPPLING OF RHEUMATIC ORIGIN

Dr. Douthwaite began by considering the precrippling stages of certain rheumatic conditions in relation to their suitability for physiotherapy. He said :—

"A pre-arthritic stage can be distinguished which particularly in the case of rheumatoid arthritis is characterised by general ill-health, loss of weight, disturbance of sugar metabolism in the direction of lowered tolerance, and the all-important defect of peripheral circulation. This was shown by the cold and clammy extremities, and by the appreciably lower temperature of the hands and feet as indicated by the skin thermometer. These cases were eminently suitable for spa treatment. The acute stage of rheumatism—e.g., sciatica or multiple joint involvement—was best treated at home. In the subacute stage, when the signs of local and general activity of the disease were subsiding, spa treatment was often of benefit in hastening recovery but had to be given with the utmost caution to prevent a relapse. In the stage of convalescence with or without contractures the treatment of patients in an institution equipped with all modern appliances of physiotherapy was to his mind an essential to success."

The speaker then considered the chief aims of spa treatment, which were he said :—

"1. Improvement of peripheral circulation, and most forms of hydro- and electro-therapy did, in fact, achieve this object. He suggested that some of the joint changes in typical rheumatoid arthritis might be directly referable to impaired capillary circulation, and drew attention to the similarity in appearance of the finger-joints in this affection and in a purely vascular disturbance such as Raynaud's disease. He referred also to some excellent results he had attained by treating rheumatoid subjects by means of infection with malaria. Six or seven bouts of fever with the associated flushing of the skin and sweating might restore movement to the stiffened small joints of the rheumatoid arthritic. The treatment should be reserved for the later stages when the active disease was dead or dying. The malaria could be stamped out with two 5-grain doses of Atebrin.

"2. Recovery of muscle bulk. It was clearly useless to restore movement to joints in the absence of muscles capable of their control. This could never be attained by massage, but success could be looked for from static contractions and exercises.

"3. Recovery of movements which has been limited by (*a*) loss of power in muscles; (*b*) loss of habit—a factor greatly underestimated; (*c*) adhesions and muscle contracture; (*d*) muscle spasm which though no doubt of importance in all joint diseases was often overlooked in osteoarthritis of the hip.

"4. Improvement in general condition."

Dr. Douthwaite concluded by saying that no physician with an interest in rheumatic diseases could afford to disregard the otherwise unobtainable facilities for treatment such as are presented by the English spas, and he hoped that the efficiency of their staffs would no longer be hampered by the complete lack of anything worthy of the name of amusement, which had unfortunately driven many patients in the past to foreign resorts.

MANIPULATIVE TREATMENT

Mr. Timbrell Fisher, surgeon to the Seamen's Hospital, Greenwich, and in charge of the special clinic of the Ministry of Pensions Hospital at Orpington, discussed in detail the manipulative treatment of stiffened joints under water, and continued :—

"The value of the various forms of baths in crippling conditions not only of children but of adults is amply clear. With regard to the possibilities of under-water manipulation, the effect of the hot water is to relieve pain and congestion, to relax muscular spasm, and relieve the patient to a great extent of the necessity of supporting the painful limb. The patient thus finds that he is able to carry out movements that were hitherto impossible owing to pain and muscular spasm. These movements must play an important part in the prevention of deformity, since limitation of movement, at first due to muscular spasm, is apt to be followed by the formation of adhesions or scar tissue. This newly formed connective tissue, which is such a potent cause of disability, may occur not only inside the joint but in the joint capsule, in periarticular structures, and even in connexion with the muscles acting upon the joint. Active and assisted movements performed in the deep pool are particularly useful in those varieties of chronic rheumatic arthritis, whether of the rheumatoid or osteoarthritic types, in which movement is very painful and associated with considerable muscular spasm. Then in addition to the action of such baths in the prevention of deformity, we have been shown that they are of value in the treatment of developed deformity. When the limitation of movement due to muscular spasm is abolished, remaining limitation of movement is due either to scar tissue or may be actually osseous. When due to scar tissue, a forced movement of the joint, when the patient is conscious, is in nearly every case associated with a degree of pain and involuntary muscular spasm, dependent upon various factors, including the skill of the manipulator and the psychological reaction to pain. But even the keenest advocate of the method of under-water manipulation would doubtless admit that, like every method of therapy, it has its limitations. Careful manipulation under anæsthesia must be considered. As the result of many years experience of a series of cases that runs into four figures, it is my considered opinion that manipulation under anæsthesia is an exceedingly valuable procedure in carefully selected cases, and that a great deal of unnecessarily prolonged suffering and financial embarrassment is still caused to sufferers from various crippling disabilities because the great possibilities of manipulation under anæsthesia are not sufficiently realised. Manipulation under anæsthesia is of most benefit where the joints are stiff owing to the presence of traumatic adhesions. Many joints, for instance, develop a painful limitation of some movement after a severe sprain that has been followed by traumatic synovitis. Some cases appear to be a combination of sprain and infection—i.e., the sprain of the internal lateral ligament of the knee or at the site of origin of the common extensors of the wrist and fingers from the external epicondyle of the humerus which, particularly in a middle-aged person, obstinately resists treatment. I believe that in these cases infection has been superadded, and very active treatment, often profitably including manipulation, should be persisted in. Adhesions may occur not only after trauma or trauma with superadded infection, but may be encountered in the more chronic stages of many diseases of joints, as in streptococcal or gonococcal arthritis. A preliminary trial should usually be made of simpler forms of physical medicine such as those which have been so ably demonstrated to us, and it is only when these fail that manipulation under anæsthesia has to be considered."

Mr. Timbrell Fisher then outlined the types of case that should benefit by manipulative treatment, of which the most suitable were rheumatoid cases or those of the proliferative kind. In polyarticular cases, he said, no joint should be manipulated, but in many cases of the more chronic type with somewhat dense adhesions a valuable procedure was to correct deformity and increase the range of useful movement by a series of manipulations, between which every effort is made to consolidate the ground gained by the last manipulation and to restore the wasted and weakened musculature. The application of these methods to different types of arthritis of the wrist was described in detail. "Manipulation under an anæsthetic," he held, "was often of value in cases of the osteoarthritic or degenerative type of chronic arthritis associated with deformity or an interference with movement that seriously interferes with function, but it was obvious that the general condition of the patient must be seriously considered before having recourse to manipulation under anæsthesia. In many cases the age and general condition of the patient would rule out any possibility of this method of treatment, which should not be undertaken unless the orthopædic surgeon who performs the manipulation can personally supervise, at any rate, the first part of the after-treatment, often of equal importance to the manipulation."

HOSPITALITY

Throughout the visit of the B.H.R. Association to Buxton the opportunities for hospitality to guests were taken full advantage of by the residents. There were various informal receptions, pleasant drives were planned, and the corporation reserved seats for an excellent performance of "The Arcadians" at the Opera House on Saturday evening.

NEW HOSPITAL FOR LLANDUDNO.—An appeal was made last week for £50,000 to build a new hospital for the town. Six acres of land have been given and the new institution is to have 60 beds. The buildings will be designed to allow of extensions to provide 120 beds.

MEDICINE AND THE LAW

Deaths after HCN Fumigation

THE unfortunate deaths at Aldershot, following the fumigation of vermin-infested cottages with hydrocyanic acid gas, were noted in our columns last week (p. 1021). So valuable is this method of destroying rats and vermin that, in spite of the recent reminder of its dangers, prohibition of its use is inadvisable. It is not an ordinary disinfectant; it has no effect upon the plague bacillus, but it kills the rats and fleas which carry the bacillus. Apart from its aid to public health in destroying the louse, the bug, the flea, and the mosquito, its economic services are well established. Employed in 1886 as an insecticide to destroy the scale pests of citrus trees in the United States, its utility for this purpose spread from California and Florida to Australia, Japan, and South Africa. In 1898 it was applied to destroy vermin in the Cape Government Railway's sleeping carriages, in 1901 to free prison buildings at the Cape from the bed-bug. Experiments in 1909 having proved its lethal effect upon rats and fleas in India, it soon afterwards became an authorised fumigant under the Quarantine Regulations of the United States. Having cleared a German flour mill of weevils in 1917, it successfully attacked plague-infected rats in the granaries of Venice in 1919. It is now perhaps best known as a process for the deratisation of ships, but it has lately been employed to free houses from vermin on the London County Council building estates. Whether it works for public health or for commerce, its action is swift and efficient. In contrast with sulphur it involves neither danger of fire nor damage to paint, metal work, fittings, or cargoes. But the gas is fatal to human beings and its smell gives scant warning. It is too useful to prohibit, yet too risky to leave unregulated; and fuller consideration of the evidence at the Aldershot inquest shows that, in spite of ample warnings in text-books, the present law is quite inadequate to control its use. No Act of Parliament requires that the commercial use of cyanide by private firms as a fumigant shall be subject to any system of licensing. The Home Office has made no rules for cyanide fumigation as a dangerous trade. The Ministry of Health has apparently no power to prescribe by regulations the method of such fumigation or the precautions to be taken before men, women, and children are allowed to return to the premises which have been thus fumigated.

THE ALDERSHOT INQUIRY

Our brief account last week of the fatal incidents at Aldershot may be expanded to show the situation with which the law should deal. The health committee of the borough council sees a free demonstration by a private company of the undoubted potency of hydrogen cyanide in fumigating verminous dwellings. It ascertains that the process has been successfully applied by other local authorities. The committee is rightly satisfied of the merits of the method and recommends its adoption at a cost of £5 per house or £2 10*s*. where four or more houses are treated. The committee advises the council that it will be necessary either for alternative accommodation to be found for the tenants for one night, or for the bedding to be removed for steam disinfection and returned the same day. The council adopts the plan and the tenants vacate their cottages from 10 A.M. on April 11th till 10 A.M. next day. The fumigator, who has plenty of experience of his work, puts on a gas-mask, enters the premises, and distributes (on the floor or between mattresses or otherwise) paper discs which have absorbed the gas; he also sprays the cyanide in liquid form. He then comes out, seals up the front doors and posts notices. At night he comes back, opens the doors, goes in and collects all his discs, throws open all windows, cupboards, and drawers. He uses some method of testing the atmosphere by means of blotting-paper dipped in a certain solution; he also relies on his sense of smell. Satisfied that all is well, he takes the keys of the cottages to the office of the sanitary inspector in an envelope inscribed "Everything O.K." The inspector receives the keys next morning and allows the tenants to return to their homes as arranged. The fumigator has followed his previously harmless and successful routine, and the sanitary inspector believes him to be expert in his own technique and has his message of assurance of safety. No warning is given to the tenants. Witnesses from two of the cottages told the coroner they detected no particularly suspicious odour; a witness from a third cottage said he noticed a nasty smell. Before breakfast-time next day two children are dead and other occupants of the premises have narrowly escaped.

The warnings in the text-books against the risks of hydrogen cyanide are in rather general terms. A detailed statement is to be found in a Ministry of Health report[1] published in 1923 and written by Dr. P. G. Stock and Dr. G. W. Monier-Williams, who are in possession of special knowledge and experience respectively of port sanitary administration and of military measures against gas attacks. The report classifies accidents as occurring during the generation of the gas, during actual fumigation, during subsequent ventilation, and afterwards when the premises have been pronounced clear. In one case in 1915, described by Dr. Benjamin Cohen,[2] a man who had often fumigated bug-infected rooms by pouring sulphuric acid on potassium cyanide and then rushing out of the room and pulling the door behind him, unfortunately reopened the door because he heard the cry of a cat. He was found unconscious in front of the door. In other cases employees have not been moved quickly enough out of a ship when the gas was being generated, or else unauthorised persons have entered premises under fumigation. In 1923 we recorded an incident in Chicago[3] where a basement restaurant was being fumigated to destroy cockroaches; an opening for a water-pipe was overlooked and the leakage of gas killed six people in a second-floor room upstairs. The Aldershot inquest illustrates the risks of ignorance. Other examples have been given by H. Fühner[4] of Königsberg. He describes an occasion when 100 soldiers, whose clothes had been deloused by hydrogen cyanide, suffered from poisoning within an hour of putting them on again. There were no deaths, but ten men lost consciousness. The extent to which particular materials retain the gas in their air spaces is a fit subject for further research.

SUGGESTED PRECAUTIONS

A more recent report issued by the Ministry of

[1] Ministry of Health Reports on Public Health and Medical Subjects. No. 19, Preliminary Report on the Use of Hydrogen Cyanide for Fumigation Purposes. 1923. H.M. Stationery Office.

[2] South African Med. Record, 1925, xiv., 35.

[3] THE LANCET, 1923, i., 762.

[4] Deut. Med. Woch., 1919, xlv., 847.

Health, on the Bed-bug,[5] suggests various precautions. Fumigation by hydrogen cyanide, it says, should be undertaken only by persons with full knowledge of the nature of the gas. A house must be kept empty till it is certified free from gas; if it is not completely detached, the houses on each side must also be kept vacant for about eight hours and be kept under observation by men trained to detect possible leakage of the fumigant. Dissipation is slow in cold weather and repeated tests may be necessary; it may even be proper to close and warm the rooms before testing afresh. Bedding, blankets, pillows, and stuffed furniture should be beaten in the open air before re-use. The Ministry's earlier report of 1923, already referred to, drew attention to the need of care in handling and storing solid cyanide, in washing receptacles wherein it has been contained, and in the avoidance of splashing. The substance is often sent out in square tins with circular openings and thus small amounts may remain as a source of danger. Residuals after fumigation must be regarded as poisonous. As much care is needed during subsequent ventilation as during actual fumigation. In work on ships conspicuous notices should be posted and a special flag is suggested. The vessel must be completely searched, a single gangway should be used, and a careful tally kept of persons who go aboard and come ashore. The fumigating gang should work from leeward to windward and from the top deck downwards; possible pockets of gas should be looked for and doubtless naval architects are bearing this point in mind in modern ship construction. Fumigators should work in pairs and the use of electric torches and of life-lines should not be forgotten. As the evidence at the Aldershot inquest showed, and as the text-books state, the sense of smell should not be relied upon. It is said that one of the quickest ways of detecting the gas in low dilutions is by the peculiar taste apparent when smoking. Self-contained oxygen breathing apparatus, if in perfect order and worn by a trained man, gives protection against the highest concentrations of gas likely to be encountered, but is cumbersome and heavy. The army type of "small box respirator," filled with a mixture of alkaline permanganate granules and activated charcoal, costs little, is light to carry, and requires no elaborate training; but the granules gradually become damp, and, after an aggregate use for about 24 hours, a new box must be fitted.

A person overcome by the fumes must be removed to the fresh air at once. In this connexion the Ministry's report deprecated attempts at rescue unless the rescuer is protected by a mask or can be hauled back to safety by a life-line. Neglect of precautions by the rescuer has, it seems, often added to the total of fatalities without effecting a rescue. Artificial respiration should be begun immediately. Prof. Barcroft has suggested the addition of carbon dioxide to stimulate the respiratory centre. A special inhaler, fitted with the Gibbs valve, has been used in New York for administrating oxygen containing 5 per cent. of CO_2; oxygen administered alone is of doubtful value. The authors of the Ministry's report of 1923 were told at the Quarantine Station at New York that the only remedy there found of any avail was artificial respiration with possibly hypodermic injections of camphor and the use of a galvanic battery. Fühner advises subcutaneous injection of 5 per cent. sodium hyposulphite up to 100 c.cm. or more; strychnine and caffeine, he thinks, merely increase the "cramps" without relief to the breathing.

The Aldershot case was one which should somehow have been prevented. The Ministry's report on the bed-bug expressly states that at present there is no statutory power to make regulations for the control of fumigation with cyanide or other poisonous gases. Here is something useful for Parliament to do.

[5] Reports on Public Health and Medical Subjects, No. 72. Report on the Bed-bug. 1934. H.M. Stationery Office.

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

GLASGOW APPOINTMENTS COMMITTEE

THE value of the Glasgow University Appointments Committee was emphasised at last week's graduation ceremony by Sir Robert Rait, the vice-Chancellor and principal. In the year 1934–1935 only 27 of the 638, graduates failed to communicate with the committee and only 48 were known to be unemployed. A feature of the past year was the number of arts students who found openings in industry and commerce. The principal appealed to young graduates to keep in touch with the committee; this is particularly important in the case of medical graduates, since the work of the committee is of special value to the young doctor after he has had some post-graduate hospital experience. Many inquiries for assistants and possible partners reach the committee, and it is sometimes difficult to get suitably qualified men in time.

It is often said of universities that interest in the student ceases as soon as he graduates. Every effort, therefore, to overcome this reproach will be welcome. It is a deplorable fact that many students graduate in medicine with little knowledge of what their profession has to offer, and with even less knowledge of how to plan their career, and it is satisfactory to find that university authorities are alive to the importance of instructing their graduands how best to make use of the knowledge they have acquired.

An organisation such as the Edinburgh Graduates Association is of great value in keeping graduates in touch with their university. The Association sends to its members the well-produced *University Journal* which is published twice yearly. It not only informs its members of university happenings, but encourages the development of university clubs all over the world. It has assisted student activities, especially in the direction of encouraging athletics, and has been able to help students who, through no fault of their own, have found themselves in pecuniary difficulties. It has recently been suggested that a similar association should be formed in connexion with the University of Aberdeen.

EDINBURGH CHARITIES WEEK

Last week was charities week in Edinburgh. The energy, enthusiasm, and ingenuity of the students has been well maintained, and as the weather has been favourable, a large sum will have been collected for the local hospitals. Unfortunately the week has been marred by a fatal accident to a student performing at the students' carnival in the Waverley Market. His "side-show" consisted in diving through a hoop into a canvas bath. The latter contained only a few feet of water, and a slight error of judgment caused him to touch the hoop, so that instead of making the necessary flat dive, he fell more vertically and fractured his skull against the bottom of the bath. Further supervision of the carnival is surely necessary when such obviously dangerous stunts are practised.

THE FIRST CHEMICAL SOCIETY

The Chemical Society of Philadelphia, founded in 1792, has been considered the first society of its kind in the world. Prof. James Kendall of Edinburgh University, however, has established the fact that a chemical society existed in Edinburgh in the year 1785. He suggests that the Philadelphia Society was the daughter of the one in Edinburgh, since the medical school of Philadelphia was instituted in 1765 under strong Edinburgh auspices.

PARLIAMENTARY INTELLIGENCE

HOUSE OF COMMONS

Reassembly after Easter

THE House of Commons reassembled after the Easter adjournment on Monday, April 29th.

MONDAY, APRIL 29TH

Cleansing of Shell-fish

Mr. OSWALD LEWIS asked the Minister of Agriculture if, in the course of his inquiry as to the desirability of making an order for the compulsory cleansing of shell-fish before they were marketed, he would consider the propriety of exempting from the operation of such an order a fishery such as the Colchester oyster fishery where, owing to the situation of the beds and the set of the tides, pollution of the shell-fish was not possible.—Mr. ELLIOT replied: My right hon. friend, the Minister of Health, by whom regulations for the control of the sale of shell-fish for human consumption are made, will no doubt be guided by the evidence of pollution or of its absence. The inquiries which we are conducting are directed to this point. If my hon. friend will give me any evidence as to beds in which pollution is impossible, I shall be glad to examine it.

Aldershot Fumigation Deaths

Mr. THORNE asked the Minister of Health if he had received a copy of the jury's recommendation in connexion with the death of two children by cyanide poisoning after their home had been fumigated at Aldershot; if he was aware that the work was done by contract; if he would make it clear to all local authorities that such work should be carried out directly by the local authority; and whether the parents of the two deceased children had received any compensation from the Aldershot local authority.—Sir HILTON YOUNG replied: The answer to the first two parts of the question is in the affirmative. I do not think that the suggestion made in the third part of the question, that the work of fumigation should be carried out directly by the local authority, would make for greater safety or efficiency. As regards the last part of the question, I understand that the question of compensation for the parents of the two deceased children is under consideration, and that allowances have been paid by the Aldershot Town Council to the tenants in respect of food and lodging for the period during which they were dispossessed of their houses.

Supply of Milk to School-children

Mr. MCENTEE asked the Parliamentary Secretary to the Board of Education the number of children being supplied with milk in all schools in the county of London, and the number being supplied free.—Mr. RAMSBOTHAM replied: Complete returns are not yet available, but it appears from the information so far received that at the end of March about 365,000 children and young persons in grant-earning schools in the county of London were being supplied with milk, of whom about 26,700 were receiving milk free of charge.

Telephones in Rural Areas

Replying to Major ATTLEE, Sir KINGSLEY WOOD, Postmaster-General, said: I think it will be recognised that the reductions which were introduced towards the end of last year were far-reaching in their scope, and they have largely contributed to an unprecedented telephone development in this country. There is, however, I believe still considerable scope for telephone expansion in our rural areas, which would also do much to assist our farmers and also others who live in remote areas of the country. We are now about to take steps which will aim at making the telephone available in rural and remote parts of the country as readily as it is in the cities and towns to-day. This must necessarily take time fully to accomplish, but as the first step I now propose to ensure, so far as practicable, that by the end of 1936 no village on the mainland of Great Britain and Northern Ireland, which has a post office, will be without a public telephone. This will mean an addition of over 1000 additional public telephone call offices in these parts of the country which have hitherto been unable to possess that easy and rapid communication which our telephone system affords to-day.

TUESDAY, APRIL 30TH

Coloured Men and Alleged "Rare Disease"

Captain A. EVANS asked the Minister of Health if he had any information regarding the outbreak of a rare and complicated disease reported to have affected a number of coloured men in the Bute area of Cardiff, some of whom were engaged in the filming of "Sanders of the River," resulting in at least half a dozen deaths.—Mr. SHAKESPEARE, Parliamentary Secretary to the Ministry of Health, replied: The answer is in the negative. Inquiries which have been made have failed to confirm the occurrence of any such outbreak as that referred to in the question. My right hon. friend is informed that only one coloured man has recently died in this area, and the cause of death was found after a post-mortem examination to be arterio-sclerosis and aortitis.

Constitution of Durham University

Mr. MARTIN asked the Parliamentary Secretary to the Board of Education whether he could announce the probable date of the appointment of commissioners to form a new constitution for Durham University.—Mr. RAMSBOTHAM replied: The Government have decided to introduce early legislation to set up commissioners to prepare statutes in general accordance with the commission's recommendations.—Replying to a further question Mr. Ramsbotham said that it was hoped to introduce the Bill in the House of Lords before Whitsuntide.

MODERN CHURCHMEN'S UNION.—A week-end conference is being held by this union at Old Jordans Hostel, Beaconsfield, Bucks, from May 18th to 20th, the subject being psychology and life. The speakers will include the Rev. L. F. Browne, M.D., physician to the Institute of Medical Psychology (psychology and religious experience), and Dr. Burnett Rae (psychology and health). Particulars may be had from the organising secretary at the Church House, Westminster, London, S.W. 1.

MOCK TRIALS.—A series of mock trials will be held at the London School of Economics, Aldwych, on Tuesdays from May 14th to June 25th at 5.30 P.M., in aid of King Edward's Hospital Fund for London. On May 14th Mr. Philip Guedella will prosecute the cinema for misappropriating history, while on May 21st the ballet will be arraigned on the charge of not planting their feet firmly on the ground. On May 28th Mr. St. John Ervine will accuse airmen of making the world too small. On June 4th the ancient Greeks must answer the charge of not knowing that they are dead, and on June 18th modern authors that of taking themselves too seriously. At the last trial on June 25th Mr. Punch has entrusted his defence for being unduly polite to Mr. E. V. Knox, his editor. The secretary of the fund may be addressed at 10, Old Jewry, London, E.C. 2.

PANEL AND CONTRACT PRACTICE

The Economy Deductions

ALONG with certain other classes of the community insurance doctors and chemists regain their standard remuneration on July 1st when, under Mr. Chamberlain's fourth Budget, the remaining half of the salaries cuts of 1931 is restored. The present is, perhaps, a convenient opportunity to indicate the effect of these cuts on the doctors. It will be remembered that the deduction took effect as from Oct. 1st, 1931, and was at the rate of 10 per cent. until July 1st, 1934, when it was reduced to 5 per cent. The actual amounts of the deductions suffered by practitioners are (1931) £165,826, (1932) £672,813, (1933) £675,318, (1934) £500,743, and upon the provisional determination of the fund for 1935 it is estimated that the 5 per cent. cut for the first six months will amount to just over £159,000. The total deductions therefore from insurance doctors, apart of course from the increased taxation to which they in common with the rest of the community have been subjected, will have amounted in round figures to £2,174,000 for England alone.

Medical Certification

Insurance doctors are sometimes asked for certificates which they are not properly called upon to issue. A case in point is that in which an insured person has been examined by a regional medical officer and reported not incapable of work. Sometimes the agent of the approved society tells the patient to obtain a final certificate from the insurance doctor, and says he cannot pay the balance of sickness benefit until the certificate has been produced. It may be that the insurance doctor does not agree with the R.M.O.'s report that the patient is not incapable of work, and in such cases it is clearly his duty, if asked by the patient, to continue to issue intermediate certificates unless and until he is satisfied that the patient is no longer incapacitated. But if the insurance doctor does not disagree with the R.M.O., and provided that the date of the examination falls within the period covered by an intermediate certificate already issued, it is not necessary for a further certificate to be issued. The Ministry of Health in August, 1934, intimated that approved societies have now been advised that where benefit is discontinued following upon a R.M.O.'s report that in his opinion the insured person is not incapable of work, they might reasonably regard the production of a declaring-off certificate as unnecessary, and that they should be prepared to pay benefit up to the date of the examination. If, in the circumstances indicated above, the payment of sickness benefit is refused, the insured person should be advised to consult the district inspector of the Ministry of Health.

Another point affecting certification which still gives rise to misunderstanding is the period covered by an intermediate certificate. No. 5 of the Medical Certification Rules provides that, if incapacity continues beyond eight days from the date of the first certificate, further intermediate certificates shall be given by the practitioner, if so desired by the insured person, week by week, during the continuance of incapacity, and for the purpose of the certification rules "week" means the period from midnight on one Sunday to midnight on the following Sunday. If, therefore, an intermediate certificate has been issued on a Monday in any week the next certificate may be issued at any time up to and including the following Sunday week.

A case recently arose in which an insured person having been in receipt of certificates of incapacity since Dec. 31st, 1934, was issued an intermediate certificate on Tuesday, Jan. 29th, 1935. On the following Saturday week, Feb. 9th, the insurance doctor saw the patient and issued a final certificate. An approved society official demanded in addition an intermediate certificate dated Feb. 5th, that is, one week after Jan. 29th.

The definition of "week" in the rules was deliberately framed so as to avoid placing on insurance doctors any obligation to issue certificates on the same day in each week, and while it may be convenient for certificates to be issued as far as possible at weekly intervals, the primary consideration in the mind of the doctor must be the condition of the patient and not merely the question of the issue of a certificate. In the case referred to above the doctor acted perfectly correctly in issuing a final certificate on Saturday, Feb. 9th, and it is a little surprising that an official should have been unable to construe the rules.

PUBLIC HEALTH

Grievances in Huddersfield

WAVES of scarlet fever and diphtheria have swept over Huddersfield in recent years. As is quite usual, their high prevalence has coincided closely in time, taxing the accommodation of Mill Hill Isolation Hospital, so that some overcrowding has occurred. The hospital contains 128 beds, not inadequate in proportion for a town with a population of 114,000 persons, although a small number of patients are admitted from other districts. To relieve pressure the small-pox hospital and wards in a poor-law hospital have been used for infectious cases, but it has been impossible to avoid some overcrowding both of the wards and of the nurses' home. Apparently a good deal of cross-infection has occurred, and this and other supposed defects of administration have been the subject of acrimonious criticism in the correspondence columns of the local press. As Dr. J. M. Gibson, the medical officer of health, explained in an interview, the most careful scrutiny of patients on admission cannot possibly detect a person incubating a second infection, and when two diseases are prevalent, and almost equally so, a high proportion of doubly infected admissions is to be expected. As so often happens during a mild outburst of public hysteria, some real mishappenings have been grossly exaggerated and unfounded suspicions of mismanagement have been aroused, which Dr. Gibson's statement should dispel. The health committee are well forward with plans for an extension of two new blocks at the hospital, presumably with nurses' accommodation in proportion, and these will consist mainly of small cubicles appropriate for dealing with just such administrative problems as have been experienced recently.

Here is another illustration of the intricacies of fever hospital administration. A hospital big enough for normal times may be half empty for long periods and yet be totally inadequate during the periodic waves of the zymotics. In Huddersfield spare beds in quiet times have been wisely used for advanced cases of tuberculosis, but their exclusion in recent years

has complicated the administration of a sanatorium not meant for late cases. In other towns measles and whooping-cough are admitted to vacant wards, but these diseases do not always conveniently occur when scarlet fever and diphtheria are in the trough of their seasonal wave. Rigid selection of scarlet fever, a mild disease in its present form, may obviate overcrowding, and this is a policy which has been safely followed in some areas. It is apparently not favoured in Huddersfield, for in 1933, when pressure on the hospital beds was already acute, 806 cases were admitted, being 96·5 per cent. of all cases notified. It cannot be that the housing conditions of Huddersfield are worse than those of Glasgow, where home treatment on a considerable scale has proved practicable. Again, the possible future effect of immunisation, especially against diphtheria, must influence the deliberations of local authorities as to hospital extension. This prophylactic measure has been pressed forward in Huddersfield, and although the immunised population had not reached dimensions sufficient to affect the incidence by the end of 1933, over 4000 children had been dealt with, among whom only two had contracted diphtheria, and that before the necessary time to develop the maximum immunity had elapsed. While additional beds at isolation hospitals are certain to prove useful for the treatment of measles, whooping-cough, pneumonia, acute rheumatism, and other acute diseases, and the demand for institutional treatment is certain to increase, it may be well to anticipate a great fall in the incidence of diphtheria and in the need to admit scarlet fever cases, as the people become more enlightened in their views, and as housing conditions improve.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED APRIL 20TH, 1935

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 0; scarlet fever, 2007; diphtheria, 1072; enteric fever, 25; acute pneumonia (primary or influenzal), 1361; puerperal fever, 53; puerperal pyrexia, 79; cerebro-spinal fever, 26; acute poliomyelitis, 2; acute polio-encephalitis, 2; encephalitis lethargica, 3; dysentery, 18; ophthalmia neonatorum, 77. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on April 27th was 3546, which included: Scarlet fever, 1057; diphtheria, 1517; measles, 27; whooping-cough, 399; puerperal fever, 18 mothers (plus 3 babies); encephalitis lethargica, 269; poliomyelitis, 2. At St. Margaret's Hospital there were 15 babies (plus 6 mothers) with ophthalmia neonatorum.

Deaths.—In 121 great towns, including London, there was no death from small-pox or enteric fever, 29(1) from measles, 10 (1) from scarlet fever, 29 (1) from whooping-cough, 32 (3) from diphtheria, 44 (14) from diarrhœa and enteritis under two years, and 167 (23) from influenza. The figures in parentheses are those for London itself.

The number of influenzal deaths is on the wane. This week deaths were reported from 62 great towns, Manchester reporting 21, Leeds, 9, Liverpool and Birmingham each 6, Portsmouth 5, Middlesbrough, Salford, and Sunderland each 4. (During the same week Glasgow reported 8 deaths, Edinburgh 1.) Five fatal cases of measles occurred at Wigan, 3 at Chester. Liverpool reported 4 deaths from whooping-cough, Manchester and Middlesbrough each 3. West Ham and Liverpool each had 3 fatal cases of diphtheria, no other great town more than 2.

The number of stillbirths notified during the week was 283 (corresponding to a rate of 47 per 1000 total births), including 42 in London.

CORRESPONDENCE

SALT LOSS AS A CAUSE OF ILL-HEALTH

To the Editor of THE LANCET

SIR,—I was much interested in Colonel McEwen's letter in your last issue; it fills in a curious gap in our knowledge. A rather severer form of the condition he calls attention to has been described by various workers in tropical climates as affecting Europeans there, under the label "functional hypo-adrenalism." Some of the cases were helped by cortical extract. Now we know that Addison's disease is accompanied by a great excretion of sodium chloride, and can be symptomatically alleviated by giving this salt. We can understand why these tropical cases simulate some of the symptoms of Addison's disease. No doubt cortical extract may diminish the loss of salt in these patients, but giving salt as Colonel McEwen suggests is both more rational and much more economical. Moreover, his observation explains the achlorhydria which has been found in the type of case to which I am alluding. Salt deprivation is known to diminish the formation of hydrochloric acid. Incidentally, should not all this diminish the zest still displayed in some quarters for prescribing a salt-free diet? The grounds on which Widal recommended this in the treatment of œdema have been abundantly disproved, and Colonel McEwen's observations suggest that this method is inadvisable in asthenic states generally.

I am, Sir, yours faithfully,

W. LANGDON-BROWN.

Cambridge, April 29th.

THE PROBLEM OF DIPHTHERIA

To the Editor of THE LANCET

SIR,—There is so much common ground between myself and Surgeon-Captain Dudley that there is little room for controversy. Nevertheless, his letter in your issue of April 13th (p. 902) leaves certain issues open. The main points of my letter of March 23rd were twofold. First as to any certainty or even probability of an increase in the numbers of carriers following inoculation against diphtheria. There has been a tendency to regard the experiences of the Greenwich Hospital School as if they constituted a crucial experiment. I think that Surgeon-Captain Dudley and his co-investigators will agree that they cannot be so interpreted. The comparison of the incidence of carriers in the school before and after inoculation (in 1928) is, in my opinion, vitiated by three points of difference:—

(1) The certain presence of a *gravis* infection in the third term of 1932 when 1296 boys were swabbed in a 10·9 per cent. of swabs were positive; it was inferred that *gravis* types were present in the school before inoculation but this must be regarded as uncertain. The report itself states (p. 31) that the outbreak in the third term of 1932 "coincided with the introduction of the Leeds serological type of '*gravis*' bacilli into the school." Incidentally the large proportion that the large number of swabs taken in this third term bears to the total "after inoculation" swabs—1276 out of 6354—overweights the total. The comparisons would only be just if the swabs had been taken at a steady rate throughout the whole of the period of observation—probably an impracticable ideal.

(2) The much higher proportion of virulent diphtheria

bacilli (T.C.D.) isolated from swabs showing morphological diphtheria bacilli (i.e., the total of both virulent and avirulent bacilli) after inoculation than before (Table IIIa, p. 41 of the report) and especially during the years 1930 to 1933, is a factor which cannot be overlooked. As shown by the report, the true proportion of virulent diphtheria bacilli before inoculation is a matter of inference.

(3) The use of a chocolate tellurite medium in 1932–33 for the isolation of colonies. H. J. Parish has pointed out (see THE LANCET, 1934, ii., 1192), and this is confirmed by Prof. Hedley Wright, that the use of this medium considerably increases the proportion of positive results—possibly by 25 per cent.

Valuable as the experience of the school is, I consider that it cannot be regarded as the basis of a belief that carrier-rates are increased following upon immunisation. The Liverpool evidence to the contrary is far from complete but is suggestive; thus in one school of 200–300 children a considerable number of swabs taken some years after the completion of inoculation were all negative.

On the other hand the evidence that *gravis* infections give rise to very high carrier-rates is very strong. A recent experience in a 48-bedded scarlet fever block showed an incidence of 25 carriers of virulent organisms among 45 swabbed; the children in one of the two wards were almost all carriers, whether inoculated or not and whether Schick-positive or not. Only one case of diphtheria arose; the source of infection was probably a nasal case as has so often been our experience. This gives a total carrier-rate of 55 per cent., a figure even higher than those quoted by Surgeon-Captain Dudley. This outbreak of carriers, which I hope will shortly be published, emphasises the second point of my letter of March 23rd—namely, that there is much evidence that carriers are less common sources of infection of cases than are the cases themselves.

I am, Sir, yours faithfully,

Liverpool, April 25th. C. O. STALLYBRASS.

CONTINUOUS DRIP BLOOD TRANSFUSION

To the Editor of THE LANCET

SIR,—I have read with great interest the article by Dr. Marriott and Dr. Kekwick in THE LANCET of to-day. In the position of house surgeon I have seen the almost miraculous results of continuous drip intravenous infusion of glucose-saline, and at that time wondered why my chiefs had not the foresight to employ whole blood in doses calculated to increase the hæmoglobin percentage to an appreciable extent.

Two points in technique have seemed to me of practical value. At the Royal Southern Hospital, Liverpool, a very neat reservoir is employed for the solutions infused. It consists of a vacuum flask, which may be of any size, with an inverted U-tube fixed to the outer cover, one end dipping into the interior, and the other end terminating in a tap and nozzle. A rubber bulb communicates by a side tube with the top of the U-tube to set the syphon in action. Another detail of even greater use is the drip bulb. The air in the upper part of the bulb tends in a little time to become absorbed by the fluid, until the level of the fluid rises up to the nozzle and the rate of flow can no longer be controlled. This is best countered by a side tube attached to the upper portion of the drip chamber and closed by a tap, a second tap of course controlling the rate of flow proximal to the nozzle. When the fluid level rises too high the flow must be turned off at the upper tap and the side tap opened to allow the fluid to fall to the requisite level.

I heartily agree with the open method of approach to the vein recommended. Plain needles and more specialised needles can be inserted by skin puncture—in expert hands. But even these hands occasionally fail to reach the vein on the first attempt, and repeated attempts in an unanæsthetised—and usually desperately ill—patient are acutely distressing if not dangerous. Moreover, the intima of the vein is so easily traumatised by a pointed object in its lumen that the subsequent infusion may be very slow or may even cease altogether.

No reference was made in the article to the reactionary rigors and even more dangerous constitutional signs which rarely accompany even the relatively minute dosage commonly employed in transfusions. It would be very interesting to hear the divergent views on the question of increased risk with this otherwise more rational dosage. I feel that in transfusion the surgeon has a most potent weapon with a wide and ever-widening range of usefulness.

I am, Sir, yours faithfully,

Liverpool, April 26th. J. GARNETT SHELDON.

SO-CALLED ACIDOSIS ATTACKS

To the Editor of THE LANCET

SIR,—Dr. Paterson's article will, I hope, evoke the discussion that it deserves. The problem at issue is, I believe, really more complicated than is envisaged by him and the authors from whose writings he quotes. I am in agreement with him that a disturbance of hepatic function is immediately responsible for the symptoms of cyclical vomiting, and that such a disturbance occurs also in many so-called allergic conditions, such as migraine, urticaria, angioneurotic œdema, certain forms of eczema, the eczema-prurigo syndrome of Besnier, and in some cases of asthma. This was clearly shown by Oriel in your own columns (1928, ii., 1009, 1064), and can be confirmed by anyone who will collect specimens of urine at different times throughout the 24 hours from a patient during an active period of his symptoms. In a characteristic case it will be found that in the period preceding the active paroxysm and during its early stages the urine is scanty, concentrated, highly acid, loaded with urates, and contains an excess of urobilin and a diminished quantity of chloride; after the paroxysm there is a diuresis, the urine becoming dilute and neutral or even alkaline, and the retained chloride is excreted. This phenomenon illustrates the futility of examining one specimen of urine in these cases.

It will be observed that in the condition under discussion, as well as in many others such as gout, there is preceding and during the period of active symptoms retention of fluid and mineral salts, particularly sodium chloride, and that in the post-paroxysmal period the retained fluid and minerals are excreted. The mobilisation and localisation of the retained fluid determine the particular symptoms or group of symptoms to which a given patient is liable. Thus in urticaria mobilisation of fluid occurs in the dermis, in angioneurotic œdema in the subcutaneous tissue, in eczema and prurigo in the epidermis and papillæ, in migraine and probably in epilepsy in the brain, and so on. This conception, which has been fully discussed in all its aspects by E. Földes (A New Approach to Dietetic Therapy, Boston, 1933), is of great practical importance because, no matter what the factors leading to retention may be in the individual case, one can control the tendency to a great extent by dietetic measures. The antiretentional type of dietary, advocated by Földes, corresponds closely with that which I have for many years advised (THE LANCET,

1929, ii., 363) in the seborrhœic state and for those who are subject to repeated colds or to chronic nasopharyngeal catarrh. Until I had read Földes's work I did not realise that the same dietetic principles might be indicated in allergic conditions; in fact, I had wrongly advised to the contrary.

The rationale of the antiretentional dietary is based on the fact that excess of carbohydrates and of fats causes retention of water and minerals, whereas proteins and nucleoproteids in particular have the opposite effect. Such a dietary is similar to that advocated by Czerny in the exudative diathesis, and by Minot and Murphy in pernicious anæmia. Briefly, it contains a relatively high proportion of proteins and foods containing nucleoproteins, whereas the intake of carbohydrates and fats is restricted, as also is that of fluid and salt. No ill-effects result from a high protein consumption, *provided that there is adequate restriction of carbohydrates and fats.* I am convinced that the modern fashion of advising the administration of large quantities of carbohydrates to children is wrong: it predisposes to the "watery" condition of the mucous membranes which renders the subject susceptible to the colds and chronic nasopharyngeal infections that Dr. Paterson considers to be the commonest provoking factors in cyclical vomiting.

As an example of the remarkable effects of an antiretentional diet the following case may be cited.

A boy of 15 was referred to my out-patient department by one of my colleagues last summer for a recurrent impetiginous anterior rhinitis, which nearly always resulted from his frequent colds. He was subject to repeated asthmatic attacks, and had so-called functional albuminuria. His mother stated that the boy consumed large quantities of sweets, jam, pudding, cake, and bread; his intake of fat was probably also excessive. I advised a strict antiretentional diet, which the mother promised to enforce. A fortnight later I saw the boy again. His rhinitis and chronic catarrh had cleared up, the albuminuria had disappeared, and his mother was astonished at the improvement in his general health. Since that time he has had no colds and has been entirely free from asthma, except at Christmas when his mother allowed him to relax his diet. He then promptly "caught a cold" and had several asthmatic attacks. Since resuming the diet he has been perfectly well.

While agreeing with Dr. Paterson that acute infections or chronic foci of infection predispose to the attacks of cyclical vomiting and allied symptoms in those who are constitutionally subject to them, my contention is that a predisposition to catarrhal infection, with the inevitable lymphoid hyperplasia that results from it, is dependent on a faulty diet which tends to cause fluid retention.

I am, Sir, yours faithfully,

Devonshire-place, W., April 23rd. H. W. BARBER.

To the Editor of THE LANCET

SIR,—Dr. Donald Paterson has obviously performed a useful action in warning against the dangers of accepting evidence of ketosis as a complete diagnosis. The clinical diagnosis "acidosis attack" can only be reached fairly by a process of exclusion of all infective cause. But when this has been done—and after vomiting and dehydration I do not look upon pyrexia only as sufficient evidence of infection—I am convinced that there remains a large group which Dr. Paterson, perhaps in his anxiety to avoid mis-diagnosis, of the admittedly much larger infective group, glossed over very scantly. I refer to the children who produce an attack repeatedly under the influence of excitement—e.g., a visit to the Zoo, a theatre, or a party, or by over-exertion, or by riding in some vehicle. They may of course themselves not infrequently be really acidotic with an infection, but the common attacks of the group of children of which I am speaking will again and again baffle the attempts to find an infective origin.

My point is this: Just as I entirely agree that infective acidosis is very common and demands no treatment between infections, I do plead that Dr. Paterson does not swing us to the other extreme and discourage treatment by higher carbohydrates and moderate restriction of fats of the child who has these frequent distressing and annoying periods of vomiting. Dr. Paterson implies that the result of such treatment has been severe dental decay: the extra carbohydrate need not be given as cereals. He also speaks as though malnutrition had resulted, but could he guarantee to fatten many of the children of the type in question? Surely he is being too hard on the dietetic modification which really need only consist in the addition of a tablespoonful of glucose powder four times a day apart from meals, and the subtraction from the normal diet of chocolate, meat fats, and cream. It is interesting that the children of the non-infective "acidotic attack" type are very commonly constant fat refusers, as has been pointed out by Dr. H. C. Cameron, and seem much fitter if their natural dislike is allowed.

Admittedly the attacks are rarely severe enough to justify admission to hospital, thereby somewhat modifying the statistical value implied in Dr. Paterson's statement of the admission rate at Great Ormond-street; but the relief and satisfaction of the parents, let alone of the children, at the control of the attack is justification enough for continuous treatment in the group to which I have confined this letter.

Matters of value in medicine frequently excite the return of the swing of the pendulum by their too enthusiastic application to an unjustifiably wide range of conditions. It is to be hoped that the usefulness of the dietetic modifications associated particularly with Dr. H. C. Cameron's name be not lost sight of as a result of the mistakes of his followers.—I am, Sir, yours faithfully,

F. HARWOOD STEVENSON.

Edgware, Middlesex, April 30th.

THE KNEE-JERK IN PNEUMONIA

To the Editor of THE LANCET

SIR,—I trust I have not misunderstood Dr. Stoddart's reference to the state of the knee-jerk in lobar pneumonia in his letter in which he so eloquently extols the genius of Hughlings Jackson. But the relationship to the anatomy of the spinal cord in the rabbit would not puzzle me so much if the knee-jerk were invariably abolished in lobar pneumonia—which, of course, is very far from the case. I was stimulated to pay special attention to this feature through a clinical lecture by the late Samuel West, who mentioned that abolition of the knee-jerk might be a valuable diagnostic aid in distinguishing acute thoracic disease from acute abdominal conditions. During the late war the concentration of material upon a very large scale afforded an opportunity for intensive investigation. The state of the knee-jerks was noted at all stages of the 558 cases of lobar pneumonia which came under my care, and since the war the series has been extended to approximately one thousand with the following results.

The knee-jerks were abolished (in the early days of the illness) in 23·7 per cent. cases. They were feebly elicited

in 12·5 per cent. cases. They were present to a degree which might be described as normal in 45 per cent. cases, and in 18·8 per cent. they were distinctly exaggerated.

It is clear, therefore, that whilst an absent knee-jerk might just turn the scale in favour of diagnosing a thoracic lesion, its presence will certainly not exclude pneumonia.

To whom is the credit due for identifying the occasional temporary abolition of the knee-jerk in pneumonia? Was it in fact Hughlings Jackson? Incidentally, one cannot help supposing that the original observation must have been at a time when it was not customary to employ the now familiar "hammer" without which a considerable number of sluggish and even normal knee-jerks might be overlooked.—I am, Sir, yours faithfully,

Brook-street, W., April 27th. ADOLPHE ABRAHAMS.

MATERNAL MORTALITY

To the Editor of THE LANCET

SIR,—I read with interest Mr. Eardley Holland's paper on maternal mortality, and I do not think his scheme of drafting specially trained men into general practice is a good one for the following reasons:—

(1) For an obstetrician to be sufficiently skilful to deal with serious complications he must be constantly handling abnormal cases. This he could not do if he were in general practice. (2) A man specially trained in obstetrics and possessing a diploma of the British College of Obstetricians and Gynæcologists will consider himself a specialist, and will probably have more confidence than his skill and experience justifies. He will be loth to call in a consultant, and his patients, knowing his qualifications, will not expect him to do so. (3) These men, having spent their early graduate years at obstetrics, will probably have an indifferent knowledge of medicine and surgery, the practice of which constitutes 80–90 per cent. of a practitioner's work.

In our endeavour to reduce maternal mortality we must not lose sight of the fact that it is just as great a tragedy for a young person to die as a result of an undiagnosed empyema or abdominal emergency as it is for a woman to die in childbirth. I think the appointment in each area of really good obstetrical consultants, who could be called upon to deliver or advise upon difficult cases, would greatly raise the standard of midwifery. The educational value to the practitioner would be considerable, and the public would expect a consultant to be called if conditions became complicated, just as they expect a surgeon to be called when serious surgical conditions arise. I am, Sir, yours faithfully,

Cheadle Hulme, April 29th. NICHOLAS CRAIG.

DOSAGE OF ASCORBIC ACID

To the Editor of THE LANCET

SIR,—I should be glad if you would allow me to correct a misstatement in your otherwise excellent annotation (p. 999). In my letter which you published on March 23rd I credited Dr. Bell with being the first to publish a case of infantile scurvy treated with synthetic vitamin C, but did not wish to imply that I had also used a synthetic preparation. My experience has been confined to ascorbic acid isolated from natural sources, as regards the treatment of both scurvy and cœliac disease.

I am, Sir, yours faithfully,

London, W., April 29th. WILFRID SHELDON.

THE WORD INSULIN

To the Editor of THE LANCET

SIR,—Having read with great interest the obituary notice of Sir Edward Sharpey-Schafer in your issue of April 6th I think that it might interest your readers to be reminded that it was Sharpey-Schafer who first made the name "insuline" generally accepted as designation for the autacoid of the islet tissue (the "Endocrine Organs," 1916, p. 128). The name had been suggested before by J. de Meyer of Brussels in 1909, and was adopted in 1922 by Banting and Best when they had succeeded in perfecting the method of pancreas extraction to such a degree that insulin could be used in practice. But Sharpey-Schafer tells us, in a footnote to the 1925 edition of his book, he had not seen de Meyer's suggestion when he made his.

I am, Sir, yours faithfully,

F. W. FORNET,

April 19th. Institute of Microbiology, Saarbruecken.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Lt. S. K. Foster to *Pegasus*.

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Lt.-Cmdr. G. F. Abercrombie to *Barham*.

Surg. Lt. J. O. Clyde promoted to Surg. Lt.-Cmdr.

Surg. Lt. J. F. Corr transferred from List 1 of Mersey Divn. to List 2 of Severn Divn.

Surg. Lts. D. M. Dean to *Furious*, and C. M. Lamont to *Drake* for R.N. Hospital, Plymouth.

ROYAL ARMY MEDICAL CORPS

Short Service Commissions: The undermentioned Lts. (on prob.) are restd. to the estabt.: I. U. Young, A. MacLennan, and J. O'Connell.

SUPPLEMENTARY RESERVE OF OFFICERS

Lt. J. A. Brocklebank, from Supp. Res. of Off., R. Signals, to be Capt.

TERRITORIAL ARMY

Capt. N. Moulson resigns his commn.

W. N. S. Donaldson to be Lt.

ROYAL AIR FORCE

Flight Lt. T. D. L. Bolan is granted a permanent commission in this rank.

RESERVE OF AIR FORCE OFFICERS

Flight Lt. J. E. Foran relinquishes his commission on completion of service.

INDIAN MEDICAL SERVICE

Majs. to be Lt.-Cols.: E. C. A. Smith, A. Y. Dabholkar, M.C., K. S. Master, M.C., S. R. Prall, R. N. Khosla, S. A. McSwiney, and H. S. Rajan.

The undermentioned officers retire: Lt.-Cols. J. McG. Skinner and J. B. Lapsley, M.C.

DEATHS IN THE SERVICES

The death occurred at Southsea on April 30th of Colonel Richard Jennings, C.B.E., M.D., late A.M.S. He was born in January, 1856, and was educated at the Royal University of Ireland, qualifying M.D., M.Ch. R.U.I. in 1878. He entered the Army as a surgeon in February, 1881, became Major in 1893, Lt.-Col. in 1901, Colonel in December, 1908, and retired in January, 1913. He took part in the South African War 1900–1902, was twice mentioned in despatches, and was awarded the Queen's medal with three clasps and the King's medal with two clasps. In 1911 he was appointed K.H.S., and in 1919 was created C.B.E. (Mil.). He married in 1898 Mabel (d. 1919), daughter of Mr. J. Borthwick Paterson.

OBITUARY

SIR RICHARD STAWELL, K.B.E., M.D. Melb.

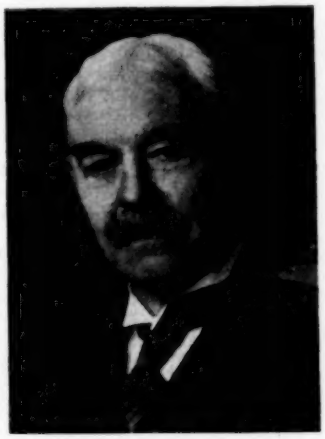
WE briefly announced last week the death in his seventy-second year of Sir Richard Stawell, almost on the eve of the annual meeting of the British Medical Association at which he was to preside. The son of Sir William Foster Stawell, chief justice of Victoria, Richard Rawdon Stawell was born in Melbourne and spent the whole of his life there, except for a brief period when he was sent to England to be educated at Marlborough. He came of well-established Irish stock, for his grandfather was Jonas Stawell of Old Court in the county of Cork, who married the daughter of William Foster, bishop of Clogher. He took his first medical qualification in 1887 from Trinity College, Melbourne, and after holding resident posts did further study in Europe and America, obtaining the D.P.H. in 1891. Shortly after his return to Victoria he was appointed to the Melbourne Children's Hospital and remained for 17 years an active member of the staff. The year 1902 began his association with the Melbourne Hospital and this lasted more than 20 years, for the greater part of which he was a member of the management committee and chairman of the house committee. After reaching the retiring age he was elected president of the hospital. To him was largely due the inauguration of systematic clinical teaching at the hospital, and one of his colleagues has put on record his appreciation of Stawell's supreme devotion to the cause of medical teaching, sparing neither time nor energy to further his object. He was a born teacher and the scientific grounding in physical signs and in neurological diagnosis which he gave his students was something never to be forgotten. Although often smarting from some well-merited rebuke, the recipient ultimately came to regard this apparently austere clinician with feelings of real affection. The idea of an Australasian Association of Physicians arose in Melbourne, and it was Stawell's aim that this body should run on lines similar to those of the sister association in this country. He was himself elected its first president. During the war he served with the third Australian General Hospital with the rank of lieutenant-colonel A.A.M.S., and became later a member of the medical advisory committee to the repatriation department of the Commonwealth. In 1929 he was created K.B.E. Sir Richard Stawell married in 1908 and leaves three children, a son and two daughters.

HUMPHRY JOHN WHEELER, M.D. Durh.

Dr. Wheeler, who died in London on April 2nd, was born in 1865 at High Wycombe, the only child by his second marriage of the late Mr. Thomas Wheeler, a banker and brewer in that town. The family was an old-established one which had done much by fostering the chair-making industry to raise the town to its present position in the industrial world. Dr. Wheeler received his medical education at St. George's Hospital and the Durham medical school at Newcastle-upon-Tyne, qualifying with the double English diploma and the M.B. Durh. in 1887. He was house surgeon at St. George's and proceeded to the M.D. Durh. in 1889. After a period of post-graduate work in Paris he returned to his native town where he practised for over 30 years, retiring in 1913. In the following year, on the outbreak of war, he joined the 13th London Regiment (territorial) as medical officer and at the conclusion of hostilities received for a further nine years an appointment under the Ministry of Pensions. He was consulting medical officer to the High Wycombe War Memorial Hospital. Dr. Wheeler married in 1892 Augusta, the eldest daughter of the late Mr. G. D. Bushe, of the Four Courts, Dublin, who survives him, with one daughter who is married to Squadron Leader F. R. Alford, M.C., R.A.F.

FRANK WINSON RAMSAY, M.D., M.S. Durh., F.R.C.S. Edin.

Mr. F. W. Ramsay, who died at Bournemouth on April 25th in his 73rd year, was educated at Aske Grammar School and at Montmorency, near Paris. He studied medicine at Newcastle-upon-Tyne, and while a student captained the Durham University football club and the Northumberland Rugby football team. He was tall, with exceptional physique and great physical strength. After qualifying in 1886 he was resident medical and surgical assistant at Newcastle Royal Infirmary, and next year started practice at Winton, near Bournemouth. He took the D.P.H. and became medical officer of health. His public work at Winton included the chairmanship of the Parish Council, membership of the Hampshire County Council, and of the Board of Guardians. He also held the office (now extinct) of way warden and was major in the 4th (Volunteer) Hants Regiment which he was asked to command. In 1893, after taking the M.S. Durh. with 1st class honours, and the F.R.C.S.Edin., he was appointed hon. surgeon to Victoria Hospital, Bournemouth, and gradually as his surgical work increased he gave up general practice and devoted himself to surgery alone. His active association with the hospital lasted 32 years, and four years ago he became chairman of the board of management, a post which he held until his death. He was also at various times surgeon to the St. Mary's Home for Invalid Ladies, the National Sanatorium for Diseases of the Chest, the Children's Hospital, Swanage, and a number of cottage hospitals in the neighbourhood. During the war he was in charge of a hospital at St. Malo. When the British Medical Association proposed to meet at Bournemouth in 1934 it was natural that he should be asked to preside, but before the meeting was held he decided that his health was not good enough for such a strain.



[*Photograph by Debenham and Gould*

MR. F. W. RAMSAY

A colleague who first met him just after he had realised his ambition to begin surgical work in what was then a small country hospital says that Ramsay held the same ideals right through his great surgical activities. The surgeon of even such a small hospital ought, he held, to be fully prepared to deal with every sort of surgical emergency that might occur

in the town in which he lived. If the art of surgery had progressed elsewhere, through the thoughtful development of existing methods and of new ideas of procedure, it was allowable to hope that some progress might be made by those practising their art in Bournemouth as it then was. These ideals have been fully realised, and the provincial hospital of 50 beds is now the Royal Victoria and West Hants Hospital with 280 beds. Ramsay's services were sought for over much of Hampshire and Dorset, where his opinion was considered decisive on all those aspects of surgery of which his great experience had made him master. Of the many surgical instruments he invented the best known are his uterine hollow dilators, but he also devised useful forms of vulsellum forceps, flushing curettes, broad ligament clamps, and vaginal hysterectomy needles.

The following notes on Ramsay's surgical procedures show the character of his work. A method of nephrorrhaphy for floating kidney goes by his name. In procidentia in elderly persons he did a subtotal hysterectomy, then sutured the stump into the lower end of the abdominal wound, transfixing the stump with a strip of live fascia. Perforated gastric ulcer he treated by bringing the ulcerating area up to the abdominal wound to which he sutured it. He then introduced a rubber catheter downwards towards the duodenum, so as to feed his patient at once with peptonised foods and fluids. The catheter he left in six weeks. For fractured patella he drilled each fragment horizontally and threaded them with silver wires which he approximated by firmly twisting in opposite directions—a method afterwards called by another name. In the radical cure for hernia he used a slip of live fascia from the external rectus to close the opening, its blood-supply being carefully preserved at the basal end. Acute hæmorrhagic pancreatitis he treated by drainage.

A pioneer motorist, and a founder member of Royal Automobile Club, Mr. Ramsay was chairman of the central committee of the Hampshire Automobile Club. He spent his holidays motoring in continental countries. At home he was keenly interested in his garden and in bird and animal life. His daughter, Dr. Olive Ramsay, to whom we owe many of these details, holds several hospital appointments in Bournemouth.

Dr. G. B. SILVER DARTER, who died at Kenilworth, Capetown, on March 21st after a long illness, was a St. Thomas's student and qualified M.B., B.S. Durh. in 1889. In the following year he married Miss Lilian K. Morris, a member of a well-known Berkshire family, and returned to South Africa where he was born and brought up. For reasons of health he settled in the Karoo, becoming medical officer of health for Victoria West. But he occupied important positions in Cape Colony, being chairman of the Board of Executors, director of the Good Hope Savings Bank, and chairman of the Union National and General Assurance Co. He is survived by his widow.

MEDICAL NEWS

Royal College of Physicians of London

At a comitia held on April 25th, with Lord Dawson of Penn, the president, in the chair, the following were elected to the fellowship :—

Sir Robert Muir, M.D. Edin. (Glasgow); Jonathan Campbell Meakins, M.D. McGill (Quebec); Hazel Haward Chodak Gregory, M.D. Lond. (London); Alfred Douglas Bigland, M.D. Liverp. (Liverpool); Hugh Hadfield Carleton, M.D. Oxon. (Bristol); Reginald Hugh Simpson, M.D. Lond. (London); Colonel John Heatley-Spencer, M.D. Lond. (A.M.S. London); Stuart Jasper Cowell, M.B. Camb. (London); Christopher Howard Andrewes, M.D. Lond. (London); Major George Reid McRobert, M.D. Aberd., I.M.S. (Madras); Alexander Cawadias, M.D. Paris (London); Philip Cyril Powter Cloake, M.D. Lond. (Birmingham); Keith Douglas Fairley, M.D. Melb. (Melbourne); John Norman Cruickshank, M.D. Glasg. (Glasgow); David Clark Muir, M.D. Lond. (Hull); Robert Platt, M.D. Sheff. (Sheffield); John Brander, M.D. Edin. (London); William Fielding Addey, M.D. Lond. (Ipswich); Reginald Thomas Brain, M.D. Lond. (London); Sir Weldon Dalrymple-Champneys, D.M. Oxon. (London); James Maxwell, M.D. Lond. (London); William Moses Feldman, M.D. Lond. (London); Alexander Macdougall Cooke, D.M. Oxon. (Oxford); Edward Rowan Boland (London); John Alexander Charles, M.D. Durh. (Newcastle-on-Tyne); William Evans, M.D. Lond. (London); Thomas Cecil Hunt, D.M. Oxon. (London); Henry Yellowlees, M.D. Glasg. (London); and Robert Alexander McCance, M.D. Camb. (London).

The following were admitted members of the College :—

Francis Ray Bettley, M.B. Lond.; Cyril Robert Birnie, M.B. Lond.; Simon Redvers Bray, M.B. Melb.; Anthony Caplan, M.B. Lond.; Olive Mary Capper-Johnson, B.M. Oxon.; Mohammed Fathi El-Seifi, M.B. Cairo; Ernest Hywel Evans, M.B. Wales; Philip Rainsford Evans, M.B. Manch.; Gordon Wilkinson Goodhart, M.D. Camb.; George Bruce Hall, M.B. Sydney; Howard Bluntisham Hodson, M.D. Lond.; John Macdonald Holmes, M.B. Leeds; Terence Graham Faulkner Hudson, M.B. Lond.; George Norman Myers, M.D. Durh.; Bernard Clive Nicholson, M.B. Camb.; Ronald Sherrington Ogborn, M.B. Lond.; John Hammond Palmer, M.D. McGill; Denis Adrian Pritchard, Surg.-Comdr., M.B. Sydney; Edward George Sayers, M.B. N.Z.; Eric Frank Scowen, M.D. Lond.; Joel Nathan Strauss, M.B. Manch.; and Edward James Starbuck Woolley, M.B. Lond.

Licences were conferred upon 103 candidates (94 men and 9 women) who have passed the final examination of the Conjoint Board and have complied with the by-laws of the College. The following are the names and medical schools of the successful candidates :—

B. Agranat, Guy's; I. J. Amorin, Manch.; A. W. H. Ashbery, Birm.; A. C. Ashton, Manch.; E. C. Atkinson, St. Bart.'s; L. J. Bacon, Camb. and St. Bart.'s; P. N. Bardhan, Singapore; A. J. E. Barlow, Leeds; A. H. Barwell, St. George's; S. M. Basu, Rangoon; P. W. G. Baxter, Guy's; T. L. S. Baynes, St. Bart.'s; B. P. Bhattacharjya, Patna and Manchester; Beatrice A. Blake, Royal Free; P. I. Boyd, Univ. Coll; T. M. Boyle, Leeds; Kathleen G. Brimelow, Bristol; A. S. Bullough, and W. P. Cargill, Manch.; R. S. Carpenter, Lond.; J. N. Cave, Camb. and St. Thomas's; A. E. Cohen, Camb. and Lond.; J. L. Collis, Birm.; W. T. Cooke, Camb. and Birm.; J. S. Cookson, Camb. and St. Bart.'s; R. W. Cope, Guy's; L. M. Curtiss, St. Bart.'s; J. V. Dacie, King's Coll.; G. C. Dansey-Browning, St. Thomas's; R. B. Davis, Camb. and Lond.; A. R. O. Denton, Guy's; G. W. N. Dunn, Camb. and St. Bart.'s; E. H. Evans and W. E. F. Evans, St. Bart.'s; Barbara J. Fisk, Margaret FitzHerbert, Evelyn J. Forgan, and Sheila M. Franklin, Royal Free; A. H. T. F. Fullerton, Camb. and Birm.; L. R. Gardner, Camb. and Middlesex; E. Gareh, Guy's; R. J. Gilpin, King's Coll.; S. Ginsberg, St. George's; C. Hardwick, Camb. and Middlesex; A. Harris, Manch.; J. R. G. Harris, Camb. and Lond.; A. J. Helfet, Cape and Liverp.; A. T. Hunt, Univ. Coll.; M. Hynes, Camb. and Middlesex; F. J. G. Jefferiss, St. Mary's; A. E. Jowett, Bristol; R. Kauntze, Camb. and St. George's; E. L. Kirstein and A. M. Lasnick, Univ. Coll.; D. C. Lavender, Camb. and Middlesex; J. H. Lawrence, Univ. Coll.; H. T. Laycock, Camb. and St. Thomas's; V. Lewis, St. Mary's; J. J. Lichterman, Glasg.; H. S. Lillie, Liverp. and Middlesex; P. S. Luffman, St. Thomas's; L. N. G. Lytton, Camb. and Univ. Coll.; A. B. Marshall, Leeds; Bertha Marston, Birm.; F. R. R. Martin, Camb. and Leeds; R. L. Mehra, Punjab and Lond.; A. G. H. Menzies, Liverp.; L. Millward, Liverp.; W. T. M. Moar, Lond.; R. L. Moody, St. Thomas's; S. H. Navidi, Bombay and West Lond.; J. G. Nel, Wits'rand and St. Bart.'s; D. A. O'Reilly, St. Thomas's; J. F. Paterson, Camb. and St. Bart.'s; J. B. Phillips, Cardiff; E. E. Pochin, Camb. and Univ. Coll.; G. Pollack, St. Mary's; P. Ramchander, Hyderabad and West Lond.; B. Reeves, Lond.; J. Revans, Middlesex; J. Robyns-Jones, Liverp.; J. R. Rose, Camb. and St. Thomas's; H. H. Samson, Cape and Lond.; C. W. A. Searle, Camb. and King's Coll.; A. Shapiro, Univ. Coll.; H. S. Sharp, Camb. and St. Thomas's; B. J. Shaw and R. A. Shove, Birm.; P. N. Shutte, St. Thomas's; A. H. M. Siddons, Camb. and St. George's; G. R. Taylor, St. Bart.'s; J. W. Todd, Middlesex; Mary R. Thompson and W. F. Viret, Leeds; A. A. Wailer, Guy's; T. J. Walters, Cardiff and St. Mary's; F. G. Ward, St. Bart.'s; P. J. Wenger-Byrne, Charing Cross; Catherine M. Whitestone, Univ. Coll; S. R. F. Whittaker, Camb. and Univ. Coll.; A. G. M. Wilson, Birm.; E. B. Woodhouse, St. Mary's; and N. R. Wyndham, Sydney.

Diplomas in tropical medicine and hygiene were conferred jointly with the Royal College of Surgeons upon the following candidates :—

D. S. Abeyagunawardene, J. C. Anders, G. F. Bartholomeusz, S. M. Basu, G. B. Beckner, F. Bell, S. Y. Chao, L. S. L. de la Harpe, G. A. Dragatsi, F. W. Farrar, I. J. Fernando, K. M. Fozdar, F. N. Grannum, T. I. Ibrahim, A. Lucas, R. B. Mehta, B. Patnaik, W. M. Quin, M. J. A. Sandrasagra, O. S. Sela, A. E. Stevens, R. L. Tiruchelvam, H. G. H. Waters, Enid M. O. Will, and W. R. Williams.

Sir Edmund Spriggs will deliver the Croonian lectures on May 14th, 16th, and 21st at 5 P.M., his title being a Clinical Study of Headaches.

Royal College of Surgeons of England

A meeting of the council of the College was held on April 25th with Sir Holburt Waring, the president, in the chair for the first time since his return from Australia, where he opened the new building of the Royal Australasian College of Surgeons. It was decided that the subject for the Jacksonian prize essay for the year 1936 should be hydronephrosis. An offer by Sir Matthew Thompson to present to the College a portrait by him of Sir D'Arcy Power, the honorary librarian, was accepted.

The following hospital appointments were approved for the six months' post required of candidates before admission to the final examination for the fellowship: Royal Infirmary, Halifax, resident surgical officer and first house surgeon; and Metropolitan Hospital, London, senior house surgeon.

The council agreed to the suggestions of the Robert Jones memorial fund committee for the foundation of a Robert Jones professorship of the Royal College of Surgeons of England for an annual lecture or lectures on some subject connected with orthopædic surgery (sum allocated £1000); and for the foundation of a travelling research fellowship to be awarded alternately by the University of Liverpool and the Liverpool Medical Institution jointly; and the Royal College of Surgeons of England. The sum of £1000 was allocated for the professorship and £2000 for the travelling research fellowship.

Sir Holburt Waring was nominated as the representative of the College to serve on the National Council for the Disposition of the Dead. The date of the reception to be given for the International Neurological Congress was fixed for Tuesday, July 30th.

William Thomas Gordon Pugh and Henry Edmund Gaskin Boyle, members of twenty years' standing, were elected to the fellowship of the College. A diploma of fellowship was granted to Frederick Ronald Edwards and diplomas in tropical medicine and hygiene were granted jointly with the Royal College of Physicians to the candidates mentioned above.

Society of Apothecaries of London

At recent examinations the following candidates were successful:—

Surgery.—M. Belo-Zercovsky, London Hosp.; A. E. Hassan, Univ. of Birm.; K. P. Pauli, Univ. of Bristol; J. Richter, St. Mary's Hosp.; L. E. Sealy, Univ. of Bristol; and H. M. R. Waddell, Univ. of Manch. and Charing Cross Hosp.

Medicine.—J. H. Bentley, Univ. of Camb. and Middlesex Hosp.; F. W. Treadwell, Univ. of Birm.; J. F. L. Walley, Univ. of Camb. and St. Mary's Hosp.; W. C. Winterbottom, St. Mary's Hosp.; and J. L. Wredden, London Hosp.

Forensic Medicine.—J. H. Bentley, Univ. of Camb. and Middlesex Hosp.; F. H. Holder, Univ. of Manch.; R. G. Joyce, St. Bart.'s Hosp.; N. O. Lucas, Guy's Hosp.; K. P. Pauli, Univ. of Bristol; A. Ponder, Guy's Hosp.; J. F. L. Walley, Univ. of Camb. and St. Mary's Hosp.; and J. L. Wredden, London Hosp.

Midwifery.—B. M. Jensen, Univ. of Liverp.; P. D. Lynch, Guy's Hosp.; and G. M. Williams, London Hosp.

The following candidates, having completed the final examination, are granted the diploma of the society entitling them to practise medicine, surgery, and midwifery: M. Belo-Zercovsky, J. H. Bentley, A. E. Hassan, J. Richter, J. F. L. Walley, and W. C. Winterbottom.

University of London

At recent examinations David Prentice obtained the post-graduate diploma in psychological medicine with special knowledge of psychiatry, and D. S. Clark with special knowledge of mental deficiency.

On May 7th and 14th, at 5 P.M., in the physiology theatre of University College, Gower-street, W.C., Dr. E. W. Fish will lecture on the physiology of teeth. On Mondays, from May 13th, at the same hour and place, Dr. D. H. K. Lee will give four lectures on the physiological effects of tropical climate. These lectures are open to all interested.

University of Edinburgh

Dr. M. M'Nair Murray and Dr. W. C. Wilson have been appointed part-time lecturers in the department of child life and health. Dr. W. G. Millar has been appointed lecturer on morbid anatomy in succession to Dr. James Davidson, and Dr. R. F. Ogilvie, lecturer in the department of pathology. Dr. J. D. Comrie, senior lecturer in the faculty of medicine, has been elected a member of the faculty and of the senatus.

British College of Obstetricians and Gynæcologists

The quarterly meeting of the council was held on April 27th, when Dr. J. S. Fairbairn, the president, who was in the chair, formally admitted to the fellowship,

William Robert Addis (Manchester), Dugald Baird (Glasgow), Alice Bloomfield (London), John Chisholm (Sheffield), Alfred Beuthin Danby (Birmingham), *Edward Kirkpatrick MacLellan (Nova Scotia), and Edward Lawton Moss (London).

The following were elected to the fellowship, but have not yet been formally admitted:—

Leighton Carling Conn (Alberta), Amy Margaret Fleming (London), Arthur Alexander Gemmell (Liverpool), Victor John Frederick Lack (London), William Collis Spackman (Bombay), and Leslie Williams (London).

The following were admitted to the membership:—

Josiah Grant Bonnin, David McKay Hart, Kenneth Alfred Knight Hudson, *Benjamin Dunning Knoblauch, *Robert MacKenzie Honey, Ronald Wallace Knowlton, John Laing Mewton, Hugh James McCurrich, Ronald Hodgson Nattrass, *Ossian Robertson, Helen Elizabeth Rodway, Margaret Rorke, Francis Edward Stabler, John Arthur Stallworthy, David Michael Stern, Hugh Stirling, and *Muriel Stowe.

* In absentia.

Ronald McRobert (India) was elected to the membership.

At the annual general meeting which followed, Mr. Aleck Bourne, Prof. James Hendry, Sir Ewen J. Maclean, and Prof. M. H. Phillips were elected to the council as representatives of the fellows, and Dr. W. C. Armstrong and Dr. C. P. Brentnall as representatives of the members. The report of the Joint Council of Midwifery was considered and generally approved, but some aspects of the scheme were reserved for further consideration.

On April 26th a reception was held in the College House, when Lady Simson presented to the College the collection of books purchased as a memorial to her husband the late Sir Henry Simson.

Queen's University of Belfast

The senate have appointed Dr. Henry Barcroft to the Dunville professorship of physiology.

Dr. Barcroft, who is 30 years of age, is the elder son of Prof. Barcroft, of Cambridge. He was educated at Marlborough and King's College, Cambridge, and qualified from St. Mary's Hospital, London, in 1932. In the following year he graduated as B.Chir. Camb., and was appointed lecturer in physiology at University College. His physiological investigations, which began at Cambridge before he took up medical work, have been concerned with the mechanics of the circulation, and are recorded in the *Journal of Physiology*.

Mr. D. C. Harrison, D.Sc. Lond., has been appointed to the White chair of biochemistry. He is at present lecturer in that subject in the University of Sheffield.

Jubilee Commemoration in New Zealand

The New Zealand Jubilee gift to the King is to be a fund for cancer research in the Dominion. It will be administered by the New Zealand branch of the British Empire Cancer Campaign, and the government will contribute £5000.

Fellowship of Medicine and Post-Graduate Medical Association

Courses in thoracic surgery will be given at the Brompton Hospital (May 13th to 18th); in proctology at the Gordon Hospital (May 20th to 25th); in gynæcology at the Chelsea Hospital for Women (May 27th to June 8th); in chest diseases at the Victoria Park Hospital (May 27th to June 1st); in venereal diseases at the London Lock Hospital (May 27th to June 22nd); in obstetrics at the City of London Maternity Hospital (May 25th and 26th); and in infectious diseases at the Park Hospital, Hither Green (June 15th and 16th). Other arrangements include: an M.R.C.P. course in chest diseases at the Brompton Hospital, during June; a clinical and pathological course, on Tuesdays and Thursdays at 8 P.M., at the National Temperance Hospital (June 11th to 27th); and an M.R.C.P. course at the Victoria Park Hospital, dealing with heart and lungs (June 5th to 21st), at 6.30 P.M., on Wednesdays and Fridays. A panel of teachers gives daily clinical instruction in various branches of medicine and surgery. A supper-dance and cabaret has been arranged to take place at Claridge's on Wednesday, June 5th, at 9.30 P.M. The dance is open to all members of the medical profession, and tickets can be obtained from the secretary of the fellowship, 1, Wimpole-street, London, W.1.

The annual dinner of the Royal Medico-Psychological Association will take place at Claridge's Hotel, London, on Wednesday, July 3rd.

Harveian Society of London

The Buckston Browne annual banquet of this society will be held at Merchant Taylors' Hall, Threadneedle-street, E.C., on Thursday, June 13th, at 7.30 for 8 P.M.

Middlesex Hospital Rebuilding

The west wing of the new Middlesex Hospital building of which the Duke of York laid the foundation-stone in June, 1928, will be declared open by the Duke and Duchess of York on Wednesday, May 29th, at 3 P.M.

Royal London Ophthalmic Hospital

The Duke and Duchess of York are opening the new block of buildings at Moorfields on May 16th. The King has consented to the new block being known as the King George V. extension. It has cost £113,000, and only £12,500 remains to be raised. An anonymous donor has promised to give £4500 if the balance of £8000 is raised by the end of June.

Hospitals and Road Accidents

In the Hospitals Year Book for 1935, reviewed in our annotations columns last week, the Central Bureau of Hospital Information gives an estimate that 25,000 victims of road accidents were treated in the voluntary hospitals of Great Britain and Ireland during 1934. The total cost incurred was £235,000, of which £110,000 was recovered by the hospitals, £30,000 from the patients or their friends, and £80,000 under the Road Traffic Acts and common law. In 1927, out of £230,000 only £26,000 was recovered.

Rockefeller Medical Fellowships

The Rockefeller medical fellowships for 1935–36 will shortly be awarded by the Medical Research Council. The value of these fellowships will be not less than £350, exclusive of allowances, and they are given in accordance with the desire of the Rockefeller Foundation to graduates who have had some training in research work in the primary sciences of medicine, or in clinical medicine or surgery, and are likely to profit by a period of work at a university or other chosen centre in the United States or on the continent before taking up positions for high teaching or research in the British Isles. Further particulars are obtainable from the secretary of the Council, 38, Old Queen-street, Westminster, S.W.1. Applications must be made by June 1st.

New Baths at Woodhall Spa

In several directions there are signs of fresh developments at the British spas. The past week has witnessed the opening of a new clinic for rheumatism, and a meeting of the British Health Resorts Association at Buxton, whilst Princess Marie Louise on April 27th laid the foundation-stone of a new bath establishment at Woodhall Spa in Lincolnshire. The "bromo-iodine salt waters" at Woodhall are derived from a shaft sunk for coal in the early years of last century. They come from strata about one hundred feet below sea level, and are hypertonic with sodium and calcium chlorides and contain also about twenty-four and fifty parts per million of iodine and bromine. The palmy days of Woodhall dated from the erection of the existing baths in 1887, but after the war the place, like some other spas, fell into neglect. An "old guard" of visitors, having knowledge of its merits, have always been faithful, however, and with recent changes of ownership a great revival of interest has taken place, under the inspiration of Sir Archibald and Lady Weigall, who have now renovated the existing baths, and added a small clinic for fango packs. They are also erecting a large new bath establishment in beautiful grounds adjoining the Petworth Hotel, which have been named the "Royal Jubilee Park" by the Princess Marie Louise. The open-air assembly at the ceremony of its foundation was attended by the chairman and members of the urban district council, a number of parliamentary and public representatives of the county, and many hundreds of residents. Mr. Geoffrey Barton, the chairman of the Woodhall Spa Advancement Association, which has been a very active and useful body, proposed a vote of thanks to the Princess, which was seconded by Dr. Leonard Boys, who said it was the happiest of his days in thirty years at Woodhall Spa. Dr. Fortescue Fox, representing the British Health Resorts Association, spoke of the great change that had come over this branch of medical practice in his time; a new *science of the health resort* had sprung into existence. The smaller spas were an essential part of a national scheme of health resorts and often obtained world-wide reputation for particular ailments. Woodhall, he thought, might concentrate especially on the relief of rheumatism by manipulation pools and fango, the effective treatment of catarrh, and inflammatory deposits in the pelvis, and the use of physical remedies for high blood pressure.

Committee against Malnutrition

As already announced, a public meeting will be held at the Conway Hall, Red Lion-square, London, W.C.1, on Thursday, May 16th, at 8 P.M., to consider especially the health and nutrition of women and children in this country. Prof. V. H. Mottram will take the chair, and the speakers will include Miss Eleanor Rathbone, M.P., Dr. Janet Vaughan, Dr. J. R. Marrack, professor of chemical pathology at the London Hospital, Mr. Joseph Needham, Sc.D., reader in biochemistry in the University of Cambridge. Tickets may be had from the hon. secretary, at 19c, Eagle-street, Holborn, W.C.1 (1*s.* each).

The committee came into existence rather more than a year ago. Its name expresses the opinion of its members that all the factors necessary for the eradication of malnourishment are now completely within the power of society; whatever degree of malnourishment may have been inevitable a century ago is now a social anomaly. Though not concerned with the measures that must be taken socially to achieve its object, it regards malnutrition as the most significant manifestation of human poverty, and it endeavours by public meetings and other means to demonstrate the facts now established scientifically. A bulletin is published every two months which is devoted to every relevant aspect of nutrition and malnutrition.

St. Mark's Hospital Centenary

The Lord Mayor presided at the centenary banquet of this hospital which was held at the Mansion House on April 25th, when an appeal was made for £60,000 for necessary extensions. Mr. H. Clifford-Turner, chairman of the appeal committee, said that is was Frederick Salmon who, a hundred years ago, conceived the idea of starting a special clinic for the treatment of cancer of the lower intestines; he set up in Aldersgate-street and there treated the poor of the City of London. His fame spread, and in 20 years he had laid the foundation-stone of St. Mark's Hospital. Now, he said, there were nearly 200 men and women knocking at the hospital door who could not be let in because they had not sufficient accommodation. A number of them were suffering from cancer of the lower intestine, which, if caught in the early stages, stood a good chance of being cured. Sir Patrick Hastings, in proposing "The Hospital," said it was the only free hospital in the world that dealt with cancer of the lower bowel. It was awful to realise that if those who were waiting to enter the hospital were kept out too long, their chances of cure were lost. Money was also required to provide proper accommodation for the nursing staff. In responding to the toast, the Lord Mayor said that Charles Dickens, than whom there was never a keener critic of charitable institutions, was a generous contributor to the hospital for 25 years. "The Centenary Appeal" was proposed by Major Colin Cooper, who said that the nature of the diseases treated had been a handicap in appealing for funds. They had no heroic incidents as had the larger hospitals, neither had they maternity wards. Cancer was bad enough, but the kind of cancer they were fighting at St. Mark's was the most terrible human affliction. When the disease was detected in its early stages the percentage of patients cured was nearly 100; at the hospital it was actually nearly 50.

Mr. R. Holland-Martin, treasurer of the hospital, replied. Sir John Barran, in proposing "The Lord Mayor," spoke of the unbroken chain of happy tradition which had associated the chief magistrate of the city with St. Mark's Hospital for 100 years. It was announced that during the evening £3443 had been collected, which, with the amount of £6070 previously collected for the building fund, made a grand total of £9513.

Chelmsford Hospital

It is announced that Mrs. J. A. Keene has given £20,000 for building extensions to this hospital. Since the death of her husband three years ago she has distributed £100,000 to various institutions and charities.

University of Dublin

Mr. Joseph Barcroft, F.R.S., professor of physiology at the University of Cambridge, has been appointed the Dr. John Mallet Purser lecturer in Trinity College, Dublin, for 1935. He will speak on the mammal before and after birth (June 25th), and on chemical conditions of mental development (June 26th). The lectures will be given in the department of physiology at 5 P.M., and will be open to all medical men and medical students.

London School of Hygiene and Tropical Medicine

The 1935–36 course of study at this school, which qualifies students to sit for the University of London diploma in public health, and covers a period of nine months' whole-time work, will begin on Sept. 30th.

An open competition will be held on June 27th and 28th for the Fishmongers' Company studentship, which carries a free place in the course. Further information may be had from the secretary of the School, Keppel-street, W.C.1.

Institute of Medical Psychology

Prof. L. J. Wilts, Dr. G. W. B. James, and Mr. A. E. Webb-Johnson have been appointed to the medical advisory board of this institute (formerly the Tavistock-square Clinic). It is announced that applications for evening treatment can now be entertained, and the names of those wishing to attend the morning and afternoon sessions may also be submitted. The address of the clinic is Malet-place, London, W.C.1.

Hospital Amalgamation in Dublin

Speaking at the annual meeting of Sir Patrick Dun's Hospital last week, Dr. T. G. Moorhead, chairman of the board of governors of the hospital, referred to the proposed amalgamation of Dun's with Mercer's Hospital and the Royal City of Dublin Hospital. He said that following on negotiations between the three institutions and careful consideration a provisional plan of amalgamation had been agreed on. The dean had received the provisional approval of the Hospitals Commission. A Bill to effect the amalgamation is being drafted, and it will probably be introduced to the Dail next October.

Retirement of Dr. M. J. Nolan

At a meeting of the committee of management of Down Mental Hospital on April 20th, the chairman described the present efficiency of the hospital as a monument to Dr. Nolan's zeal and foresight. He is now relinquishing office after 42 years at Downpatrick, his final act being the inauguration of a new department for electro- and hydro-therapy and occupational treatment recently opened by the governor of Northern Ireland. Dr. Nolan began his professional life in general practice in Limerick city, but soon turned to asylum work, of which his 50 years' experience has now entitled him to the position of consulting visitor in lunacy to the Lord Chief Justice. He carries with him into retirement the good wishes of the whole service.

Royal Sanitary Institute

The annual health congress of this institute will be held at Bournemouth from July 15th to 20th under the presidency of Lord Malmesbury. Among the presidents of the sections are Dr. Thomas Carnwath (preventive medicine) and Dame Louise McIlroy (maternity and child welfare), while Dr. R. Veitch Clark presides over the conference of medical officers of health. The many subjects arranged for discussion at the congress include various aspects of venereal disease, the care of the mother in industry, the care of the older worker, the health resort as part of the public health service, the milk supply, the influence of deafness on sickness and disablement benefits, the simplification of national health insurance, and overcrowding in relation to the new Housing Bill. A health exhibition will as usual be attached to the congress, and an attendance of about 1500 members and delegates is expected. Particulars may be had from the secretary of the institute, 19, Buckingham Palace-road, London, S.W. 1.

Medical Diary

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, May 7th.

Orthopædics. 5.30 P.M. (Cases at 4.30 P.M.) Annual General Meeting. Mr. E. Laming Evans: 1. Partial Recovery of Brachial Plexus following a Complete Traumatic Rupture. Mr. R. Brooke: 2. Osteitis Fibrosa after Removal of Parathyroid Tumour. Mr. L. H. F. Walton: 3. Synovectomy of Knee for Chronic Synovitis following Trauma. 4. Synovectomy of Knee for Chronic Non-traumatic Synovitis.

WEDNESDAY.

Surgery: Subsection of Proctology. 5 P.M. Annual General Meeting. Discussion: The Conservative Surgery of Carcinoma of the Rectum. Openers: Prof. Grey Turner and Mr. H. H. Rayner.

FRIDAY.

Clinical. 5.30 P.M. (Cases at 4.30 P.M.) Annual General Meeting. Cases of generalised diseases of the skeleton will be shown. Short papers on this subject will be read by Mr. H. A. T. Fairbank and Dr. Donald Hunter.

SOUTH-WEST LONDON MEDICAL SOCIETY.

WEDNESDAY, May 8th.—9 P.M. (Bolingbroke Hospital, Bolingbroke-grove, Wandsworth Common), Mr. Terence Millin: The Obstructing Prostate.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.

FRIDAY, May 10th.—8.45 P.M. (Miller General Hospital, S.E.), Dr. L. W. Bain: The Battle of Medicine. (Presidential address.)

BIOCHEMICAL SOCIETY.

SATURDAY, May 11th.—2.45 P.M. (Department of Biochemistry, Oxford), Short Communications and Demonstrations.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, May 6th, to SATURDAY, May 11th.—MAUDSLEY HOSPITAL, Denmark-hill, S.E. Afternoon course in psychological medicine.—ST. JOHN'S HOSPITAL, Leicester-square, W.C. Afternoon course in dermatology. (Open to all.)—ROYAL WATERLOO HOSPITAL, Waterloo-road, S.E. All-day course in medicine, surgery, and gynæcology.—BROMPTON HOSPITAL, S.W. Sat. and Sun., Week-end course in chest diseases.—Courses arranged by the Fellowship are open only to Members and Associates.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

MONDAY, May 6th, to SATURDAY, May 11th.—Dr. Archibald Durward: Course in Anatomy and Physiology. (Second week.)

ST. MARY'S HOSPITAL, W.

THURSDAY, May 9th.—5 P.M. (Institute of Pathology), Prof. E. D. Adrian, F.R.S.: The Electrical Activity of the Brain.

LONDON SCHOOL OF DERMATOLOGY, 49, Leicester-square, W.C.

TUESDAY, May 7th.—5 P.M., Dr. W. N. Goldsmith: The Nervous System in Relation to Skin Diseases.

THURSDAY.—5 P.M., Dr. J. M. H. MacLeod: Infections of the Skin with Yeast-like Organisms.

FRIDAY.—5 P.M., Dr. W. K. Sibley: Alopecia.

INSTITUTE OF MEDICAL PSYCHOLOGY, Malet-place, W.C.

WEDNESDAY, May 8th.—3 P.M., Dr. H. Crichton-Miller: Insomnia. 4.30 P.M., Dr. Cedric Shaw: The Allergic Diseases: Case-histories.

ROYAL INSTITUTION, 21, Albemarle-street, W.

FRIDAY, May 10th.—9 P.M., Dr. C. S. Myers, F.R.S.: The Scientific Approach to Vocational Guidance.

UNIVERSITY OF LONDON.

TUESDAY, May 7th.—5 P.M. (University College, Gower-street, W.C.), Dr. E. W. Fish: The Physiology of Teeth. (First of two lectures.)

UNIVERSITY OF BIRMINGHAM.

TUESDAY, May 7th.—3.30 P.M. (General Hospital), Prof. Seymour Barling: Cases Illustrating Gastro-duodenal Surgery.

WEDNESDAY.—3.30 P.M. (Anatomy Theatre, University, Edmund-street), Dr. Howard Collier: Metallic Poisonings.

FRIDAY.—3.30 P.M. (Queen's Hospital), Mr. Bernard Ward: Recent Advances in the Diagnosis and Treatment of Diseases of the Genito-urinary System.

ROYAL INFIRMARY, Manchester.

TUESDAY, May 7th.—4.15 P.M., Mr. W. R. Douglas: Diagnosis and Treatment of Carcinoma of the Breast.

FRIDAY.—4.15 P.M., Mr. P. R. Wrigley: Demonstration of Surgical Cases.

ROYAL INFIRMARY, Dundee.

THURSDAY, May 9th.—3.15 P.M., Mr. Chisholm: Clinical Gynæcological Cases. 4.15 P.M., Dr. Fairlie: Ovarian and Pituitary Hormones.

UNIVERSITY OF DURHAM COLLEGE OF MEDICINE.

SUNDAY, May 5th.—10.30 A.M. (Newcastle General Hospital), Mr. J. Clay: Surgical Cases of Clinical Interest.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION.

WEDNESDAY, May 8th.—4.15 P.M. (Royal Hospital for Sick Children), Dr. Stanley Graham: Medical Cases.

Vacancies

For further information refer to the advertisement columns

Aberdeen Royal Hospital for Sick Children.—Ophthalmic Surgeon.
Accrington, Victoria Hospital.—H.S. £150.
Banbury, Horton General Hospital.—Res. M.O. At rate of £150.
Bedford County Hospital.—First and Second H.S. At rate of £155 and £150 respectively.
Belfast, Forster Green Hospital, Fortbreda.—H.P. At rate of £150.
Birmingham, Camwell Hall Babies' Hospital.—Res. M.O. At rate of £250.
Birmingham City Maternity and Child Welfare Dept.—Temporary M.O.'s. Each £10 per week.
Birmingham, Dudley-road Hospital.—Jun. M.O. At rate of £200.
Birmingham, Erdington House.—Jun. Asst. M.O. At rate of £200.
Bolingbroke Hospital, Wandsworth Common, S.W.—H.S. At rate of £120. Also Hon. Phys. for Dis. of Children.
Bootle General Hospital, Liverpool.—Hon. Surg.
Bradford, Royal Ear and Eye Hospital.—H.S. £160.
Brighton, New Sussex Hospital for Women, Windlesham-road.—H.P. £100.
Brighton Sanatorium and Infectious Disease Hospital.—Jun. Res. M.O. At rate of £250.
Bristol General Hospital.—Sen. Res. M.O. £200.
British Medical Association, Tavistock-square, W.C.—Asst. Med. Secy. £800.
Burton-on-Trent General Infirmary.—Cas. O. and H.P. £150.
Cancer Hospital, Fulham-road, S.W.—Asst. Radium Officer. £350.
Cardiff, Welsh National School of Medicine.—Part-time Demonstrator. £50.
Central London Throat, Nose and Ear, Hospital, Gray's Inn-road, W.C.—Third Res. H.S. At rate of £75.
Charing Cross Hospital, W.C.—Hon. Anæsthetist.
Cheltenham General and Eye Hospitals.—H.S. to Eye, &c., Dept. £300.
Chester Royal Infirmary.—H.S. £150.
Child Guidance Council, Upper Woburn-place, W.C.—General Secretary. At rate of £400.
Children's Hospital, Hampstead, N.W.—Res. M.O. At rate of £150.
Coventry and Warwickshire Hospital.—H.S. for Aural and Ophth. Depts. At rate of £125.
Denbigh, North Wales Sanatorium.—Asst. Res. M.O. £200.
Dewsbury and District General Infirmary.—Second H.S. £150.
Dorchester, Dorset County Hospital.—H.S. £160.
Eastbourne, Princess Alice Memorial Hospital.—Res. H.S. £150.
Edinburgh Royal Infirmary.—Superintendent. £800.
Evelina Hospital for Sick Children, Southwark, S.E.—H.S. At rate of £120.
Fulham Hospital, St. Dunstan's-road, Hammersmith, W.—Clin. Asst. At rate of £150.
Golden Square Throat, Nose, and Ear Hospital, W.—H.S. £100.
Greenwich, Dreadnought Hospital.—Asst. Radiologist. 50 gns.
Halifax General Hospital.—Jun. Res. M.O. £250.
Harrogate, Royal Bath Hospital.—Res. M.O. At rate of £156.
Hastings, Royal East Sussex Hospital.—Hon. Phys.
Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—Asst. for Dept. of Pathology. £350.
Hospital for Sick Children, Great Ormond-street, W.C.—H.P. and H.S. Each at rate of £100.
Hospital for Tropical Diseases, Gordon-street, W.C.—Res. Med. Supt. £400.
Huntingdon Administrative County.—Asst. County M.O. and Asst. School M.O. £50 a month.
Liverpool Sanatorium, Delamere Forest, Frodsham.—Second Asst. to Med. Supt. £200.
Llanelly and District Hospital.—Hon. Part-time Radiologist.
London Homœopathic Hospital, Great Ormond-street, W.C.—H.S. Also Gynæcological H.S. Each at rate of £100.
London Hospital, E.—Paterson Research Scholar and Chief Asst. in Cardiac Dept. £400. Also 1st Asst. to Gyn. and Obstet. Dept.
London Lock Hospital, Harrow-road.—Surg. Reg. £100.
London University.—Geoffrey Duveen Travelling Studentship. £450.
Macclesfield General Infirmary.—Second H.S. At rate of £150.
Manchester, Ancoats Hospital.—Cas. O. At rate of £250. Med. Reg. £50. Also H.S. At rate of £100.
Manchester Ear Hospital, Grosvenor-square.—Non-Res. H.S. At rate of £150.
Manchester, Monsall Hospital for Infectious Diseases.—Asst M.O. £350.
Manchester, Park Hospital, Davyhulme,—Res. Surg. O. £500.
Manchester Royal Infirmary.—Jun. Asst. M.O. in Radiological Dept. £350.
Manor House Hospital, Golders Green, N.W.—Jun. M.O. £200.
Margate, Royal Sea Bathing Hospital.—H.S. At rate of £200.
Market Drayton, Cheshire Joint Sanatorium.—Clin. Asst.
Middlesbrough, North Riding Infirmary.—Third H.S. £125.
National Hospital for Diseases of the Nervous System, Queen-square, W.C.—Registrar. £200. Also H.S. £150.
Newark General Hospital.—Res. H.S. £175.
Newcastle-upon-Tyne Eye Hospital.—Jun. Res. H.S. £150.
Newport, Isle of Wight, County Mental Hospital.—Clin. Asst. At rate of 30 gns.
Newport, Mon., Royal Gwent Hospital.—Sen. Res. O. £350–£400.
Northampton County Mental Hospital, Berrywood.—Jun. Asst. M.O. £350.
Oldham, Boundary Park Municipal Hospital.—Res Asst. M.O. At rate of £200.
Oswestry, Robert Jones and Agnes Hunt Orthopædic Hospital.—H.S. At rate of £200.
Preston, Sharoe Green Hospital.—Sen. Asst. Res. M.O. At rate of £150.
Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Res. Anæsthetist. £100. Res. Anæsthetist and Dist. Res. M.O. At rate of £90. Also Asst. Res. M.O. At rate of £80.
Radium Institute, Riding House-street, W.—H.S. At rate of £150.
Reading, Royal Berkshire Hospital.—Cas. O. and H.S. Each £125.
Royal Chest Hospital, City-road, E.C.—Res. M.O. and H.P. At rate of £150 and £100 respectively.
Royal College of Surgeons of England.—Election of Professors and Lecturers.
Royal Northern Hospital, Holloway, N.—Res. M.O. £370. H.S. and H.P. Each at rate of £70.
St. Bartholomew's Hospital, E.C.—Asst. Physician-Accouch
St. Bride's, Pembrokeshire, Kensington Hospital.—Res. £350.
St. Helens County Borough.—Deputy M.O.H. £700.
St. Mary's Hospital Institute of Pathology and Research.—Research Studentship. At rate of £200.
St. Mary Islington Hospital, Highgate-hill, N.—Asst. M.O.
Sheffield Royal Infirmary.—H.P. At rate of £80.
Shrewsbury, Royal Salop Infirmary.—Two Res. H.S.'s. Each at rate of £160.
Southampton, Royal South Hants and Southampton Hospital.—Cas. O., Res. Anæsthetist, and H.S. Also H.S. Each at rate of £150.
South Shields, Ingham Infirmary.—Sen. and Jun. H.S.'s. £200 and £150 respectively.
Stockport Infirmary.—H.P. At rate of £150.
Stoke-on-Trent, Stanfield Sanatorium.—Res. M.O. £350.
Sunderland Royal Infirmary.—H.P. and H.S. Each £120.
Swansea, Cefn Coed Hospital.—Asst. M.O. £350.
Swansea Valley, Adelina Patti Hospital, Craig-y-nos.—H.P. At rate of £150.
Talgarth, Breconshire, Mid-Wales Counties Mental Hospital.—Asst. M.O. £350.
Truro, Royal Cornwall Infirmary.—H.S. £170.
Tunbridge Wells, New Kent and Sussex Hospital.—Second H.S. £150.
University College Hospital Dental School, University street, W.C.—Demonstrator in Mechanical Dept. £200.
Wakefield Mental Hospital.—Sixth Asst. M.O. £350.
Warrington, County Mental Hospital, Winwick.—Asst. M.O. £500.
Wolverhampton and Midland Counties Eye Infirmary.—H.S. £150.
Woolwich and District War Memorial Hospital, Shooters Hill, S.E.—H.P. and H.S. Each at rate of £100.
Worksop, Victoria Hospital.—Two Residents. At rate of £150 and £120 respectively.

Births, Marriages, and Deaths

BIRTHS

ABRAHAMS.—On April 25th, at Welbeck-street, the wife of Sidney Abrahams, M.D. Lond., of Leytonstone, E., of a son.
BOND.—On April 25th, at Brighton, the wife of Laurence Temple Bond, M.B. Camb., of a daughter.
EVANS.—On April 19th, at Edgbaston, Birmingham, the wife of L. P. Jameson Evans, M.B. Camb., F.R.C.S. Eng., of a daughter.
HINDLEY.—On April 21st, at Watford, the wife of G. Talbot Hindley, M.R.C.S. Eng., of a daughter.
IRVINE.—On April 25th, the wife of K. Neville Irvine, D.M. Oxon., of Henley-on-Thames, of a daughter.
JONES.—On April 24th, at Liverpool, the wife of Tudor Jones, M.B. Glasg., of a daughter.
LANGMEAD.—On April 19th, at Tunbridge Wells, the wife of L. B. Langmead, M.R.C.S. Eng., of a daughter.
MACBETH.—On April 26th, the wife of R. G. Macbeth, B.M. Oxon., F.R.C.S. Edin., of Oxford, of a son.
SEWARD.—On April 24th, at Exeter, the wife of Charles Mackay Seward, M.D., F.R.C.P. Edin., of a daughter.
SHAW.—On April 26th, at Harley-street, W., the wife of Wilfred Shaw, M.D. Camb., F.R.C.S. Eng., of a daughter.
STENHOUSE.—On April 17th, at Morpeth, the wife of Geoffrey B. Stenhouse, M.B. Manch., of a son.
TWIGG.—On April 19th, at Salisbury, the wife of Major T. H. Twigg, M.B. N.U.I., R.A.M.C., of a son.
WALKER.—On April 22nd, at South Farnborough, Hants, the wife of G. Secker Walker, M.B. Oxon., of twin sons.
WILSON.—On April 26th, at Mwanza, Tanganyika, the wife of George A. Wilson, M.B. Aberd., E.Afr. Medical Service, of a son.
WRIGHT.—On April 24th, at Welbeck-street, London, W., the wife of James Wright, M.B. Aberd., of Great Bentley, Essex, of a son.

MARRIAGES

PATTERSON—HABERSHON.—On April 25th, at St. Mary Magdalene Church, Whiston, C. F. Lloyd Patterson, M.R.C.S. Eng., to Phyllis Joan Habershon, only daughter of Mr. A. R. Habershon, of Oakwood Grange, Rotherham.

DEATHS

RAMSAY.—On April 24th, at Bournemouth, Frank Winson Ramsay, M.D. Durh., F.R.C.S. Edin., in his 73rd year.
RYGATE.—On April 23rd, John Richard Rygate, L.R.C.P.I., L.R.C.S. Edin., of Barnet.
SCOTT.—On April 29th, 1935, Sack Noy Scott, M.R.C.S., L.R.C.P., D.P.H., at Lynscott, Headland Park-road, Paignton, South Devon, aged 73 years.
STURROCK.—On April 24th, at Inverness, James Prain Sturrock, M.A. St. And., M.D. Edin., H.M. Commissioner of the General Board of Control, Scotland, Edinburgh.
WILSON.—On April 22nd, suddenly, David Ashley Wilson, M.B. Glasg., Great Budworth, Cheshire, in his 58th year.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

SOME ASPECTS OF THE PSYCHOLOGY OF KINDNESS

MARY ALLEN, M.A. Camb., M.R.C.S. Eng.

KINDNESS, as it is usually understood, is a very ordinary thing, and has such peculiar and unlooked-for effects on both the giver and the recipient, that it may prove very interesting to investigate it and to learn something more about it. "As it is usually understood" is meant to indicate that there may be another type of kindness not belonging to the instinctual and emotional life, but belonging to the world of the spirit, that which is an ever open door and a true charity. This kindness will be thought of again at the end.

The statement that "It is more blessed to give than to receive," would be upheld by many many people, and it is astonishing to notice how often the receiving of kindness is attended by the spirit of "envy, hatred, and malice and all *uncharitableness*." "I could not bear you to do it out of kindness. I am only a patient whom you are being decent to." This kind of remark is so often heard from patients, but an even better illustration of what they may feel was demonstrated by one patient in a dream. The patient was a woman, unmarried, aged 32. For reasons into which it is unnecessary to enter, she was having treatment for an extremely small fee. Her dream was as follows:—

"A very primitive man wearing animal skins had offered her a brooch of great value, and she was searching among her possessions for something to give in return that should be of equal value to the man with the brooch, but not of equal value to her."

On analysis of the dream, the primitive man was found to represent the analyst who had offered her something very valuable for a very small amount of money. Two distinct feelings emerged, one of great admiration and one of distinct contempt. She said that it seemed so foolish and silly to offer her such a valuable brooch for so little, she had not much respect for the man. She gave the impression that she really thought he must be a little weak in the head to have done such a thing. For two interviews before the production of this dream, the analyst had been wondering why there had been such an atmosphere of contempt about, and why the patient had given the impression of being so superior, because at first she had done nothing of the kind.

There is another type of person who laps up kindness like a cat laps up milk, but the more she is given the more she demands, and when the supply fails she turns and rends. Lastly, there is the person who possesses, and is capable of acquiring so little from life, that kindness is an absolute necessity, and is, in some of these cases, thankfully received. It may seem odd to suggest that in some cases only the kindness is thankfully received. Is not everyone glad when others are kind to them? Does not everyone like having things given to them? Do not all people thankfully receive? There are indeed comparatively few people who are capable of *taking*. It is far harder to take than to give, it is more blessed to give than to receive.

The Incapacity to Receive Kindness

What is it that makes it so hard for people to take? What lies behind this incapacity to receive kindness? The following are some of the motives concerned: (1) That that particular form of kindness is not desired at all. (2) The receiving of kindness may make the recipient feel inferior. (3) The recipients must not allow themselves to receive anything at all. (4) It prevents the recipient from the joy of feeling themselves to be hurt, badly used, or martyrs.

I

To take the first of these motives—that the particular form of kindness is not desired; most people know that rather interfering kindness offered to satisfy some desire of the giver. It is illustrated very well in the giving of Christmas presents. "I must give Dolly something. What will do? Oh, I know! that orange tablecloth that I bought at that Sale of Work last week." There is no thought that perhaps Dolly may not use tablecloths, or even if she does the orange cloth may not go with the cerise flowers on the breakfast service. Again, it is of no use offering a person something that they have no room for, which is the same as having no wish for. It is no use assuming that they would like it because one would like it oneself. The offering then falls where there is no space for it, where no response is possible.

II

The second motive behind the inability to receive was that it made the recipient feel inferior. Why? It is not the fault of the kindness alone, or of the recipient alone, which makes the latter feel inferior, but of the relationship between the two. The kindness which increases the inferiority feeling of a person is the kindness which includes pity, and extremely few people can endure to be pitied. Although it is said that pity is akin to love, it may also be perilously akin to contempt. For a person to be conscious of being pitied is for them to be conscious of how very little they have in comparison with the person pitying. They feel powerless, unimportant, and dependent, and the feeling gradually arises—"How dare they make me out to be nobody! I don't want their pity, blast them!"

It is a very common thing, this feeling of inferiority, when there does not seem to be any power to get things from life. Superiority, power, and well-being go so very much hand-in-hand with the quantity of material possessions, including brains, and physical charm and beauty among those material possessions. It must always be so as long as to feel good, to have a feeling of well-being, means to possess much; as long as quantity is confused with quality. There is another feeling of the recipient of kindness, which says, "I don't want them to do it out of kindness, but because they want to do it." This gives a definition of kindness—the doing something for another person, and the recipient says, "I don't want them to do anything for me. What I really want is for them to love me." This was very aptly illustrated by the patient who said, "I am only a patient whom you are being decent to."

This type of inferiority is very largely mitigated by the giving of something back. The same patient was invited by the analyst to share a taxi, as they were both going for a short distance in the same direction. The patient said, "Oh, no; it wouldn't be fair," the idea being that it would only be fair if she paid part of the fare. She could not allow herself to have anything unless she balanced it by an equal giving. The second patient who dreamt about the brooch, it was seen also dreamt that she was trying to find something to give. Both these patients felt undervalued; the one with the taxi because she herself could not afford the fare of a taxi, and she did not feel that she was giving her analyst anything by accompanying her. She never felt that she was capable of giving anyone any pleasure by her presence. The patient of the brooch-dream felt undervalued because it accentuated how little value she had when measured by material possessions.

There is a very strong instinctive tendency that something must always be given "for value received." It would seem quite true, and to be a question of balance and relationship and to work something like this. Before a baby is born it has warmth, safety, comfort, and food whenever it wants

it, or even before it knows it wants it. There is no want and no desire; the relationship inside the mother can be called a balanced relationship, or, better still, a neutralised relationship.

In a book on landscape painting by a well-known artist now dead, a good deal of space is given to the question of arrangement in pictures, and a sketch is shown in which the arrangement on one side is balanced by by the arrangement on the other.

Thus there are two hills, one on each side of the picture, each side matches, the sketch giving the impression of being quite dead. The same effect can be obtained by the arrangement of furniture in a room. For instance, a table can stand exactly in the middle of the room with half-a-dozen books round it at equal intervals apart; or the arrangement of a mantelpiece may be as follows: the actual mantelpiece held two objects, a picture, or rather two pictures in a double frame hinged together, and a clock. Above was a mirror very little larger than the breadth of the double picture when opened out. Beneath the mantelpiece was, of course, the fireplace. The clock, a very small one, stood at one end of the mantelpiece, but the picture was exactly under the mirror, right in the centre. The arrangement very considerably took away from the value of the picture.

A second picture followed the neutralised one of the landscape book, a picture in which nothing matched and very little was on the same level. A second arrangement of the mantelpiece came about, in which all that was moved was the picture, and that was moved to the other side of the mirror.

The first picture was dead, and the first arrangement of the mantelpiece was dead; they left the impression of there being no further use for them. The second picture and the second arrangement of the mantelpiece were alive, because they gave the impression of an unbalanced scale, leaving the observer to supply the other side of the balance and so form a relationship.

With the baby before birth there is no relationship because there is no unbalance. Likewise with the patient and analyst, at the beginning, and for the first part of the treatment, there is no relationship because there is no unbalance on the part of the patient. The receiving of value for which nothing is given in return creates an unbalance, which the patient cannot tolerate. It is the capacity to tolerate the unbalance which brings relationship with all that follows in its train into the realm of possible things.

III

Following on what has been said above is the third of the motives behind the inability to receive kindness, the motive that will not allow the recipients to receive anything at all. They are not *open* to kindness. It is not possible to put anything where there is no space for it; the patient has balanced himself and there is no room within the balance for anything else. Both sides match and are equal; there is no swing and no movement; nothing can be taken in. The patient is in the same position as the baby inside the womb; the balance has been formed because the patient could not possibly tolerate the unbalance; thus there is no room for kindness, or for anything to be received; there is nowhere to put it without turning something else out. "It is more blessed to give than to receive" can be taken in more ways than one.

IV

The fourth motive—that kindness prevents the recipient from enjoying being hurt, or feeling badly used, or posing as a martyr, is really all much of a piece with the third one that has just been discussed. It would seem to work this way: The child in the womb has everything it wants before it wants it, and there can be no unbalance. After birth, this state of things no longer exists and the baby has to wait for its food, and to become accustomed to not having what it wants even when it wants it. In other words, it must endure unbalance and a small space of *not having* is entering into its life. It varies in size, and may be very, very small, but there it is, and the question of unbalancedness is the question of keeping that space free and open, so that the balance can move and take in anything that comes along and does not remain a fixed balance. If both sides of the balance are cluttered up, it stays put, and nothing can be taken in without first turning something out.

Now the possible things that can be put into that small space to make the balance are numerous, and martyrdom and enjoyment of being hurt are of the number. Kindness, something given, threatens to turn something already possessed out of the balance. One of those things has been said to be martyrdom. It is a curious but very real pleasure that certain people get out of this feeling, and anything given to them in a direct fashion is unwelcome, because then the feeling of martyrdom and ill-usage is very difficult to maintain. The enjoyment of ill-usage can go to great lengths, even to the pleasure in seeing someone else made a favourite of, because it increases the feeling of ill-usage. It seems almost past belief that anyone should enjoy these feelings: so why do they?

The original feeling is: "I want to be everyone's favourite, and to be loved and valued very highly, but I find I'm not." That is an unbearable situation, and there are several things which the patient can do about it. One is: "I can't have the pleasure of being the best treated so I will have the pleasure of being the worst treated." There is distinction in being the worst, the patient is not of the common herd. In this case, kindness threatens the loss of the distinction which is so much valued. There is another very unpleasant habit which illustrates this point. It is the habit that some people have of saying: "Of course, I don't matter." The remark may be a perfectly genuine one, and the person may not matter in that particular circumstance, which fact he may be understanding and accepting, but as a rule it is the sign of the false martyr. Tremendous satisfaction is obtained by not having value, because if dissatisfied with the value he did receive the patient would find it too painful to bear, so it becomes a pleasure not to have it or to be undervalued.

A patient, married, aged 34, came in one day grumbling furiously because the waiting-room had a few odd things about and was not as tidy as usual. It was just before Christmas, and the patient said "Of course the house was kept for the doctors, and the patients only came second: they did not matter." The doctor said: "Well, it is just Christmas time: you must excuse it this once. I don't expect it will be like that again."

The fury of the patient when she came in was as nothing to the fury she exhibited after this remark. She had been thoroughly enjoying her own martyrdom, and the doctor, quite unthinkingly, pricked the bubble. She did not get over it for the whole hour, and nothing that the doctor could say was of the slightest use. It often occurs that anger and hatred are directed against the givers of kindness. Resentment is felt by people against one who makes them feel inferior, or who takes away from them, however unwittingly, their chosen joy.

The Giver and his Motives

A great deal has been said about the recipient of kindness. What, now, of the giver and his motives? Why does he want to give? (1) To be important and to have power. (2) To create an emotional situation, and to gain love. (3) To relieve a painful situation. (4) As a compensation for feelings of unkindness. (5) To maintain a balance.

I

To be important and to have power is the driving force or motive power behind very many activities, and one of the methods of obtaining these things, or rather of feeling oneself to have obtained them, is to be in the position to bestow gifts, privileges, and kindnesses of various sorts. The tiny baby has everything given to it, and later may come to look upon the condition of receiving as one of inferiority.

What an enormous superiority is to be found attached to the position of the person who gives, who has many possessions, or much money to give away! How very inferior feels the person who is unable to give an adequate tip! And again, how marvellously superior it may feel to be in the position of Lady Bountiful! Even more superior is it to be able to pull strings! "I'll put a word in for him, Mrs. ——" or "I could have got you in if you had come to me about it" are quite frequent remarks from people in positions of importance, and how the ones that feel inferior long to be able to say it too!

A patient, aged 39, was in the habit of bringing her doctor flowers, but she always brought a very curious assortment, such as a few daffodils, two tulips, a bunch of violets and a piece of lilac. When asked why she brought such a varied bunch she did not quite know, but she thought that she wanted her doctor to feel that she had a very wide choice so that she could feel superior.

II

Gifts are often brought and kindnesses done in order to create an emotional situation. This is very well illustrated by patients. The gift must be brought in person, so that they may be thanked, and it feels as if there is a much closer relationship with their analyst than before. They go away from the interview feeling that their analyst is pleased with them, and thinks how nice they are, and it all feels very intense, which is what they want. They feel themselves to be loved and to be of value. Under the same heading in everyday life comes the embroidering of slippers for the curate, or the "pair of (offertory) bags worked for the vicar by a lady of the congregation." Another aspect of this comes out in a sort of vicarious kindness very well illustrated by that very delightful children's book, "The Wild Ruthvens." The book deals with a family of boys and girls, the eldest girl being very much attached to a curate of the neighbouring church. The amount of kindness expended on the boys' Sunday-school class compared with the very conspicuous lack of it shown at home, is amazing.

III

Kindness is often the result of a desire to relieve a painful situation. It is undoubtedly a horrible thing to see pain and suffering in another individual, and it becomes very intensely painful when seen in a loved person. Of course, the natural instinctive reaction is to say: "I can't bear this. I must do something about it at once; this situation must be altered quickly." An anxiety situation has arisen. It is all very well to make an effort to relieve the painful situation, but it is advisable to have some idea as to whether the desire to alter it is to relieve the pain of the suffering person, or to relieve one's own anxiety and consequently unbearable feelings. This latter type of kindness may be devastating, and it also very often results in the "weariness in well doing," because it is often not very far-seeing and the giver finds it very difficult to bear the fact that the situation is not really relieved, but owing to mistakes must lapse again and again into the same old situation. The giver in these cases is apt to get very exasperated, and even annoyed, and is inclined to feel that he can never get rid of his protégés, and that they are always asking him for things.

IV

To be kind as a compensation for feelings of unkindness is very common indeed. Children are usually brought up that to show animosity is wicked, and that they will not be loved if they do show it, or at any rate they will be very strongly disapproved of. The result is that they come to disapprove of themselves for having feelings of animosity, and the feeling is repressed or ignored and is sometimes balanced by an excessive kindness.

There was a girl, aged 14, who had a stepmother. The latter was not physically cruel, but was very jealous of and the position the child occupied in relation to her father, she made the child's life an absolute misery. At Christmas, and on her birthday, however, the stepmother produced marvellous presents, thereby completely bewildering the child, who felt she was being unjust and horrible in her estimation of her stepmother.

Another frequent example of compensatory kindness is the daughter's care for the widowed mother. The following is an interesting case in which there was a brother and sister, and a mother widowed at a very early age.

The boy, who was very devoted to his mother, grew up very fair, with beautiful wavy hair, and a rather womanish expression. He was very popular socially, very artistic, and had very second-class brains. Moreover, as has been said, he was very fond of his mother. He is now about 40, or a little more, and of all the years since he left school at 18, he has been about 10 years only in England.

The girl grew up, very intellectual, not very feminine, and obviously cut out for a university career. She has stayed at home to look after her mother, though her feeling is almost one of hatred and her jealousy of her brother is unmistakable. Her cry has always been: "I can't leave mother." She sees now, at this very late stage of proceedings, that at one time she could have left, but it is now too late as her mother is actually too old and infirm to be alone.

This type of kindness based on the motive of unkindness is the type that kills. Very little thought is given to the recipient and to the things they would like done. It can even be used as a weapon of attack. It is very easy to kill by kindness where the original motive is to kill.

V

Giving can maintain a balance. Something has been said about the inability to put anything where there is no place for it unless something is turned out, and this question brings in the relationship of kindness to guilt. Guilt can be described as the feeling maintained by the balance being made up of something that does not really belong there. If there is anything in the wrong place, discomfort results; but how has it got there? It is quite obvious that it has been put there, and it is more than probable that it is the possessor himself who has put it there; taken it out, so to speak, of its right place and time and put it in the balance. If that is so, then a space which in its turn should not be there has been left from whence the original something was taken. As a vacuum is intolerable, something must be turned out to put in the place left vacant. The person concerned manages quite well as long as he can delude himself that the vacuum is not there, as long as it is not brought to his notice by anything outside. As soon as he realises its existence, then he feels uncomfortable and must do something about it. He feels he must not, or ought not to receive anything and that if he does he must either pay it back at once, or deprive himself of something else. He may even react by anger punishing the person who is kind to him, because he feels he really should punish himself for taking the kindness or for the original theft.

The instinctive life will always fill up gaps, emptiness is unbearable—"Nature abhors a vacuum," so that any feeling of emotional emptiness is dealt with by removing something from the surrounding medium and putting it in the empty space. The remover then feels balanced and complete, though it may be a stolen balance, and a stolen completeness. And of course, there is no room for anything to come in, no room to expand and grow; and moreover there is that empty space outside; the person whose character one would like to take away must be praised to the skies, and the person whose possessions one would like to remove, and emotionally does remove, must be given things. It is very interesting to notice

what excellent testimonials may be given where the employed person is unconsciously disliked.

In conclusion it may not be out of place to make a few remarks about cruelty. Cruelty is kindness reversed, and as much cruelty is perpetrated in the name of kindness, and by its technique, as by the recognised methods of cruelty. It consists in giving people what they do not want, and in withholding from them something that they do want. How much of that is done in the name of kindness, and more than ever in the name of Charity? True charity is composed of the two sorts of kindness: that which gives and that also which lets be; and that which lets be is much the rarer of the two. Why? Because in the worship of action and in the anxiety to relieve a painful situation, it is not usually thought that there is as much power in inaction as there is in action: that the former can be as much a manifestation of love as that which tries to do something about it. There is no truer description of kindness, charity, or love, which are all one, than the old familiar text in the Bible:

> Charity suffereth long and is kind; charity envieth not; vaunteth not itself, is not puffed up, doth not behave itself unseemly, seeketh not her own, is not easily provoked, thinketh no evil; rejoiceth not in iniquity, but rejoiceth in the truth; beareth all things, believeth all things, hopeth all things, endureth all things. Charity never faileth; . . .

It would be difficult to find a more perfect description of the acceptance of *not having* and *not doing*, which is the essence of that charity, motivated by love and including kindness. Action itself is the offspring of a love relationship, the child, not one of the parents, and before that relationship takes place both parents *have not*.

Finally, kindness does not maintain a balance: it is an ever-widening circle, but neither the kindness given nor the kindness received attains its full fruition until it circulates, and ultimately comes back to the giver to be sublimed and circulated again on a higher level of the spiral.

"Cast thy bread upon the waters and thou shalt find it after many days . . ."

TRAVEL AND EXPLORATION

To launch a new journal at the public is nowadays an anxious venture, but there can be no doubt of the welcome that awaits the *Geographical Magazine*. Its scope is much the same as that of the *National Geographic Magazine* of America, which has long and deservedly enjoyed a large circulation here as elsewhere. It consists of signed accounts of travel or observations both at home and abroad, and it is illustrated so freely and well that it will appeal to children almost as much as their elders. The first issue, dated May, 1935, contains articles on Abyssinia, the Lake District as a national park, Rajputana, the Arctic air route, the desert highway of North Syria, India's north-east frontier, and the changing face of Amsterdam, while Dr. Brian Maegraith describes, with fascinating photographs, the life of "our stone-age contemporaries" the aborigines of Central Australia. Judging by beginnings, the editor, Mr. Michael Huxley, will be successful in his aim—to make the dry bones of geography live. In so doing he hopes to provide incidentally an understanding of world problems which no other periodical can give.

The *Geographical Magazine* is published by Messrs. Chatto and Windus from 40, Chandos-street, London, W.C. 2, at 1*s*. The annual subscription (post free) is 15*s*., and half of any profits earned will be assigned to a fund for the advancement of exploration and research, and the promotion of geographical knowledge. The trustees administering this fund are to meet under the chairmanship of the president of the Royal Geographical Society.

Appointments

BATCHELOR, G. F. GRANT, F.R.C.S. Eng., has been appointed Honorary Surgeon to the West London Hospital.

DOUGLAS, J. B., M.B. St. And., Chief Assistant in the X Ray Diagnostic Department of St. Bartholomew's Hospital, London.

DUTHIE, R. J., M.D. Aberd., Hon. Assistant Physician to the Aberdeen Royal Infirmary.

JACKSON, HARVEY, F.R.C.S. Eng., Honorary Assistant Surgeon to the West London Hospital.

KEERS, R. Y., M.D. Edin., Second Assistant Medical Officer to the King Edward VII. Sanatorium, Midhurst.

MOORE, A. M. A., F.R.C.S. Eng., Hon. Assistant Surgeon to the Poplar Hospital for Accidents.

MOWAT, G. GORDON, M.B. Camb., F.R.C.S. Edin., Honorary Aural Surgeon to the Royal Infirmary, Bolton.

NORRIE, F. H. B., M.B. Ch. M. Aberd., F.R.C.S. Edin., Hon. Junior Surgeon to the Ear, Nose, and Throat Department of the Aberdeen Royal Infirmary.

NORRIE, F. H. B., M.D., Ch.M. Aberd., F.R.C.S. Edin., Honorary Assistant Surgeon for Diseases of the Ear, Nose, and Throat, at the Royal Aberdeen Hospital for Sick Children.

POCOCK, J. A., M.B. Camb., F.R.C.S. Eng., Resident Medical Officer to the St. John's Hospital, Lewisham.

WHALEY, J. B., M.D., D.L.O., Resident Aural Registrar to the Hospital for Sick Children, Great Ormond-street.

WILLIAMS, E. ROHAN, M.D., M.R.C.P. Lond., D.M.R.E., Assistant Medical Officer in Charge of the X Ray Department, St. Mary's Hospital, London.

WOODHAM, C. W. B., M.R.C.S. Eng., Research Officer in the Deep X Ray Therapy Department of St. Bartholomew's Hospital, London.

London County Council Hospital Staff.—The following appointments, promotions, and transfers are announced. A.M.O. (I.) and (II.) = Assistant Medical Officer, Grades I. and II.

BAIN, W. I., B.Ch. Camb., A.M.O. (I.), Queen Mary's Hospital for Children.

SCOTT, M. H., M.B. Lond., A.M.O. (I.), Queen Mary's Hospital for Children.

HUGHES, J., B.Ch., A.M.O. (I.), Downs Hospital for Children.

COLBECK, S. C., M.B. N.Z., A.M.O. (I.), Grove Park.

COOPER, P. T., M.B. Camb., A.M.O. (I.), St. Pancras.

ROBSON, J. S., M.B. Belf., A.M.O. (II.), Constance-road Institution.

COOKE, S. C. S., M.R.C.S. Eng., A.M.O. (II.), Dulwich.

STEVENSON, A. C., M.B. Glasg., A.M.O. (II.), Highgate.

BUGGLE, G. A., L.R.C.P. Dub., A.M.O. (II.), Holborn and Finsbury Institution.

SAYCE, A. M., M.B. Wales, A.M.O. (II.), Paddington.

DISNEY, M. E., M.B. Lond., A.M.O. (II.), Queen Mary's, Sidcup.

DRUKER, J., M.B., Ch.B. Manch., A.M.O. (II.), St. Benedict's.

BRUCE, R. D., M.B. Aberd., House Surgeon, Hackney.

KETTLEWELL, H. B. D., M.R.C.S. Eng., House Physician, Hackney.

CAFFELL, T. E., M.B. N.Z., House Physician, St. Alphege's.

BARKER, G. A., M.R.C.S. Eng., House Physician, St. Giles.

CAREY, W. A., L.R.C.P. Lond., House Surgeon, St. Giles.

OVENS, G. H. C., M.R.C.S. Eng., House Physician, St. James.

LENANTON, G. A. R., M.R.C.S. Eng., Clinical Assistant, St. Mary Abbots.

JOHNSON, W. A., M.R.C.S. Eng., House Surgeon, St. James.

HOPKIN, D. A. B., M.R.C.S. Eng., House Physician, St. James.

REID, J. OWEN, M.D. Edin., Senior A.M.O. (I.), St. George-in-the-East.

SIMPSON, W., M.D. Glasg., A.M.O. (II.), St. Alphege's.

MURPHY, F. D., M.B. Irel., Senior A.M.O. (II.), Paddington.

GRAHAM, W. H., M.B. Glasg., F.R.C.S. Eng., Senior A.M.O. (II.), St. Mary's Islington.

CUSSEN, K. R., M.B. Melb., A.M.O. (I.), St. Luke's Hospital, Lowestoft.

JONES, A. N., M.B. Liverp., F.R.C.S. Eng., A.M.O. (I.), Bethnal Green.

GOLDRING, H. J., M.B. Belf., A.M.O. (I.), Lambeth.

SMITH, D. B., M.B. Toronto, A.M.O. (I.), St. Stephen's.

DOUGLAS, A. M., M.B. N.Z., A.M.O. (I.), St. Stephen's.

CUNNINGHAM, A. A., M.B. Dub., A.M.O. (I.), South-Eastern.

Certifying Surgeons under the Factory and Workshop Acts: Dr. M. ZIMMERMAN (Marlow, Buckinghamshire); Dr. R. A. K. WIENER (High Wycombe, Buckinghamshire).

SHEFFIELD ROYAL INFIRMARY.—This institution continues to treat patients to the limits of its capacity, and the total expenditure of £68,031 last year increased by over £3000 as compared with 1933. The income of the hospital shows an increase of well over £9000.

BRISTOL ROYAL INFIRMARY.—There was an increase in both in-patients and out-patients at this hospital during last year. There was also an increase in ordinary income, but the ordinary expenditure exceeded income by over £10,000. Under the heading of extraordinary expenditure the largest item was £2952 for bank charges. The average cost per occupied bed was £2 19*s*. 8¾*d*., as compared with £2 18*s*. 4*d*. last year and £2 19*s*. 9*d*. in the previous year.